Vol. 930 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT OFFICE

AMOCO OIL CO.
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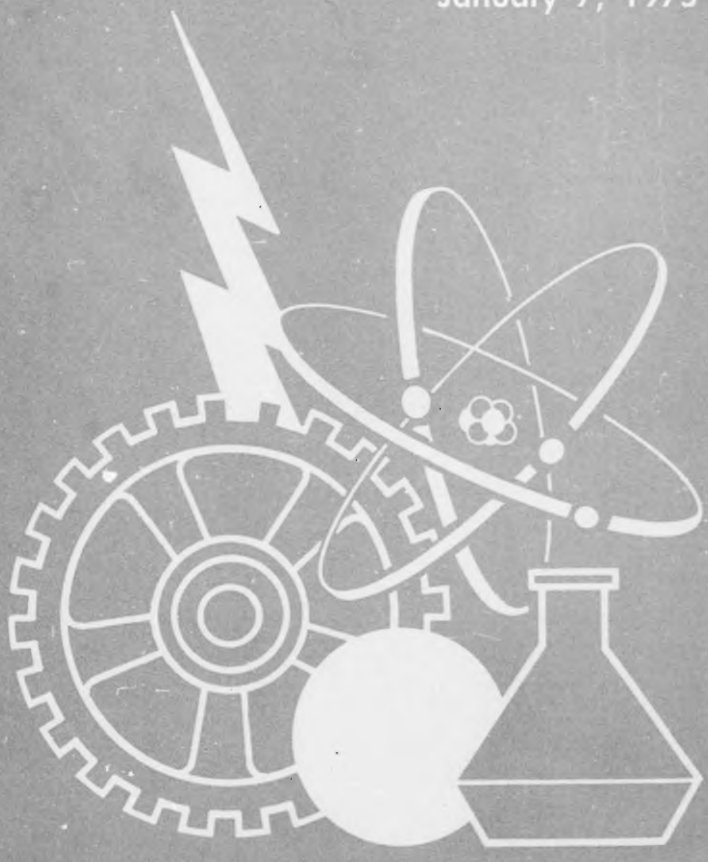
A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

January 7, 1975



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U. S.
DEPARTMENT
OF COMMERCE

Patent
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

January 7, 1975 Volume 930 Number 1

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THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $211.00 per annum, foreign mailing $52.75 additional; single copies $4.10 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $60.25 per annum, foreign mailing $15.10 additional; single copies $1.25 each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS, price 60 cents each.

CIRCULARS OF GENERAL INFORMATION concerning TRADEMARKS, price 50 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

CONSOLIDATED LISTING OF RECENT OFFICIAL GAZETTE NOTICES RE PATENT OFFICE PRACTICES AND PROCEDURES

PATENT SECTION

The following is a compilation of the more important notices and rules changes which have been published in the OFFICIAL GAZETTE *from July 1, 1964, through December 31, 1974. These notices and rules changes are currently in effect except as otherwise noted, and are published as a part of our "Better Service to the Public" program.*

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INFORMATION AND CORRESPONDENCE

(1) INFORMATION RE APPLICATION STATUS

In view of the relatively long pendency of patent applications at the present time, the final disposition of which may, in some cases, be of substantial importance to the public in general or, at least, to persons other than the applicants, it has been decided effective immediately to advise any person who makes written request for information as to the status of a United States application referred to by number in a foreign patent, which patent is identified in the request, whether the application is pending, abandoned or patented and, if patented, what the patent number is. The former practice of giving similar information with respect to an application referred to by number in a United States patent (Manual of Patent Examining Procedure, section 102) will be continued.

EDWARD J. BRENNER,
Dec. 11, 1964. *Commissioner of Patents.*

[809 O.G. 1293]

(2) STATUS OF APPLICATIONS REFERRED TO IN ALLOWED PATENT APPLICATIONS

Hereafter, examiners are authorized to indicate the abandonment status of applications referred to in patent applications ready for issue without a formal examiner's amendment.

In the situations where referred to applications are patented, present procedure permits the entry of "now Patent No. _____" and initialling in the margin by the examiner. Similarly, where the referred to applications are abandoned, the entry "and now abandoned" should be made and initialed in the margin by the examiner.

WILLIAM FELDMAN,
Aug. 21, 1974. *Deputy Assistant Commissioner for Patents.*

[926 O.G. 732]

(3) TELEPHONE NUMBERS ON OFFICE ACTIONS

Effective immediately, the full surname of the Examiner who prepares the Office action will, in all cases, be typed below the action on the left side. The Examiner's telephone number will be typed below his name. This number should be called if the case is to be discussed or an interview arranged.

The Notice of December 10, 1964, 810 O.G. 308, and Change Notice 2–15 are rescinded.

RICHARD A. WAHL,
Apr. 5, 1965. *Superintendent, Patent Examining Corps.*

[813 O.G. 1099]

(4) EXPEDITING PAPERS RELATING TO APPEALS

In order to expedite the handling and processing of all papers relating to appeals, it is essential that all such documents include the Group Number to which the application is assigned, as well as the Appeal Number and Serial Number.

EDWIN L. REYNOLDS,
May 8, 1965. *First Assistant Commissioner.*

[815 O.G. 417]

(5) TELEPHONE NUMBERS ON AMENDMENTS AND OTHER PAPERS

In view of the increased use of telephone interviews regarding matter which can be readily cleared up by a telephone call to applicant or his representative, it is again recommended that amendments and other papers, such as letters of transmittal, include the complete telephone number with area code and extension, preferably near the signature of the writer.

RICHARD A. WAHL,
Mar. 11, 1966. *Assistant Commissioner.*

[825 O.G. 1]

(6) ZIP CODE REMINDER

By Executive Memorandum of June 18, 1965, President Johnson directed all Federal Agencies to take the lead in adopting the ZIP Code system and instructed the Postmaster General to issue regulations governing the use of ZIP Codes by such agencies.

Pursuant to this directive, Section 137.26 has been added to the Postal Manual requiring compliance by Federal Agencies as follows:

1. Effective January 1, 1966, official mailings containing typed or handwritten addresses must include the ZIP Code.
2. Effective January 1, 1967, all Federal Agencies must use the ZIP Code in the addresses on *all* official mail and are required to presort quantity mailings by ZIP code.

TO THIS END, ALL FUTURE LETTERS, COUPONS, AND OTHER PAPERS BEARING THE SENDER'S ADDRESS WHICH ARE MAILED TO THE PATENT OFFICE MUST SHOW THE ZIP CODE DESIGNATION OF BOTH THE SENDER AND THE PATENT OFFICE.

The Patent Office ZIP Code is 20231. This designation should be used when writing to the Patent Office for any matter. In addition, the sender's own ZIP Code designation should be given. The benefits to be gained by the immediate use of ZIP Code are many: positive identification

of areas; faster delivery of mail by reducing the number of handlings from point of origin to destination; and easier identification of post office address.

C. A. KALK,
Mar. 22, 1966. *Director of Administration.*

[825 O.G. 428]

(7) HAND DELIVERY OF DUPLICATE COPY OF PAPERS BY ATTORNEY

The Notice appearing in 833 O.G. 1 is hereby superseded. The practice set out in the above notice is extended as follows:

In further implementation of the Notice in 829 O.G. 1755 concerning discontinuation of the practice of hand delivery by attorneys or others of officially date stamped papers, it is directed that prompt consideration and appropriate action be taken on the hand-delivered duplicate copy of such papers, which may include amendments, powers to inspect, requests for extension of time, etc.

The effect of such consideration and action should be communicated to applicant or his representative at the earliest practicable time to clarify the status of the case.

If requested, at the conclusion of an interview, it would be appropriate to indicate on the attorney's copy and the Office duplicate copy any agreement reached and to initial and date both copies.

Actual clerical entry of amendatory matter usually will require the presence in the file of the original paper; however, pending receipt of the original, examiner and clerical processing of the application should proceed, based on the duplicate copy, as far as practicable in the circumstances of each case.

RICHARD A. WAHL,
Dec. 21, 1966. *Assistant Commissioner.*

[834 O.G. 829]

(8) HAND DELIVERY OF PAPERS

The notices of November 10, 1969 (869 O.G. 345) and September 8, 1970 (879 O.G. 667), regarding "Hand Delivery of Papers," are superseded and the practice indicated below is hereby made effective.

Any paper which relates to a pending application may be personally delivered to an Examining Group. However, the Examining Group will accept the paper only if: (1) the paper is accompanied by some form of receipt which can be handed back to the person delivering the paper; and (2) the Examining Group being asked to receive the paper is responsible for acting on the paper.

The receipt may take the form of a duplicate copy of such paper or a card identifying the paper. The identifying data on the card should be so complete as to leave no uncertainty as to the paper filed. For example, the card should contain the applicant's name(s), Serial No., filing date and a description of the paper being filed. If more than one paper is being filed for the same application, the card should contain a description of each paper or item.

Under this procedure, the paper and receipt will be date stamped with the Group date stamp. The receipt will be handed back to the person hand delivering the paper. The paper will be correlated with the application and made an official paper in the file, thereby avoiding the necessity of processing and forwarding the paper to the Examining Group via the Mail Room.

The Examining Group will accept and date stamp a paper even though the paper is accompanied by a check or the paper contains an authorization to charge a Deposit Account. However, in such an instance, the paper will be hand carried by Group personnel to the Office of Finance for processing and then made an official paper in the file.

WILLIAM FELDMAN,
Jan. 29, 1974. *Deputy Assistant Commissioner for Patents.*

[919 O.G. 1070]

(9) ATTACHMENTS TO OFFICE ACTIONS

To expedite the preparation and mailing of certain Office actions, the following changes in practice are effective July 1, 1967:

Where references are furnished, applicant's copies of the Office action will be camera reproductions of the ribbon copy instead of the usual carbon copies. The list of reference citations, heretofore typed directly on the action, will be on a separate form, Notice of References Cited, PO–892, attached to applicant's copies of the action.

The manner of furnishing copies of the references remains unchanged.

About Aug. 1, 1967, the use of attachments to the Office action will be extended to include notification of informalities in the application and drawings. Where applicable, Notice of Informal Patent Drawings, PO–948, and Notice of Informal Patent Applications, PO–152 (rev.) will be attached to the first action.

The attachments will bear the same paper number and are to be considered as part of the action.

Replies to Office actions should include the 3-digit Art Unit number to expedite handling within the Office.

RICHARD A. WAHL,
June 29, 1967. *Assistant Commissioner.*

[840 O.G. 711]

APPENDIX A

(10) PUBLIC INFORMATION APPENDIX—PATENT OFFICE

A. *Purpose.*

The purpose of this Appendix is to describe, in general, the public information services of the Patent Office, to describe the places at which and the methods whereby the public may obtain information, make submissions or requests or obtain decisions, to inform the public as to the sources or availability of rules, regulations, procedures, forms, instructions, or other requirements of the Patent Office, which affect the public, and otherwise to comply with the requirements of Section 552 of Title 5, U.S.C. as amended by Public Law 90–23, June 5, 1967 (81 Stat. 54).

B. *Public Information Services.*

(1) The Patent Office provides the public with a wide range of information relating to the organization, structure, description, and functions of the Patent Office. This includes material published regularly on a weekly basis, such as the OFFICIAL GAZETTE, and copies of the patents and trademark registrations identified therein. General information concerning the procedures for obtaining patents or registering trademarks, and for utilizing the search rooms and Scientific Library of the Patent Office is readily available.

(2) Publications of the Patent Office are listed in the catalog of publications sold by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402. They are also listed in the Introduction of the "Rules of Practice of the United States Patent Office in Patent Cases," and in the pamphlet "General Information Concerning Patents." The Patent Office also publishes a circular "Patent Office Publications," which lists the available publications, and provides information as to price and source. These publications include:

a. Annual Index of Patents.
b. Decisions of the Commissioner of Patents.
c. Manual of Patent Classification, and Classification bulletins.
d. Patent Laws (pamphlet edition).
e. Directory of Registered Patent Attorneys and Agents Arranged by States and Cities.
f. Guide for Patent Draftsmen.

(3) The Patent Office has an Office of Information Services where the public may obtain a list of current publications and general information concerning the functions and services of the Patent Office. Information relating to patents may be obtained from the Patent Reference Branch of the Office of Patent Services, and information relating to trademarks may be obtained from the search room of the Trademark Examining Operation.

C. *Guide to Published Rules and Regulations.*

(1) Patent Office rules of procedure, descriptions of forms, substantive rules of general applicability, and statements of general policy are published in the Federal Register. Rules are currently codified in Title 37, Chapter I, Code of Federal Regulations, and are also available in pamphlet form entitled "Rules of Practice of the United States Patent Office in Patent Cases" and "Trademark Rules of Practice of the Patent Office with Forms and Statutes," each of which is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

(2) The Patent Office maintains also an administrative staff manual, entitled "Manual of Patent Examining Procedure," and an index thereto, for the general guidance of its staff and the public. The manual, with its index, as amended, changed, and supplemented from time to time, is available in the Patent Office (the Public Search Room and Library) for inspection and copying, and copies are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

D. *Submission of Requests and Applications.*

The established places at which and the methods whereby the public may make requests concerning Patent Office functions, operations, and procedures are listed in Sections B and C of this Appendix.

E. (*Reserved*).

F. *Inspection and Copying of Opinions and Orders.*

(1) Final opinions and orders in the adjudication of patent cases, statements of policy and interpretations, and other material required to be made available for public inspection and copying under 5 U.S.C. 552(a)(2) are made available for such purposes in the search room of the Patent Reference Branch in the Main Commerce Building, 14th Street between Pennsylvania Avenue and Constitution Avenue, NW., Washington, D.C., 20231, readily accessible from the entrance on E Street near 14th Street. Instructions concerning the use of this facility are contained in the introductory portion to the pamphlet edition of the Rules of Practice in Patent Cases, and the pamphlet "General Information Concerning Patents."

(2) Final opinions and orders in the adjudication of trademark cases, statements of policy and interpretations, and other material required to be made available for public inspection and copying under 5 U.S.C. 552(a)(2) are made available for such purposes in the search room of the Trademark Examining Operation * * * from 8:00 a.m. to 6:00 p.m. on workdays only. Instructions concerning trademark operations are contained in the pamphlet "General Information Concerning Trademarks."

G. *Inspection of Bureau Records.*

(1) Applications for patents are required by law to be kept in confidence by the Patent Office and no information concerning such applications may be divulged by the Patent Office without authority of the applicant or owner, unless necessary to carry out the provisions of any Act of Congress or in such special circumstances as may be determined by the Commissioner (35 U.S.C. 122).

(2) Special situations are recognized by the regulations (37 C.F.R. 1.11 and 1.14; Manual of Patent Examining Procedure, section 103), which prescribe the procedures to be followed in the opening of certain patent applications to inspection.

(3) Assignment records, digests, and indexes (37 C.F.R. 1.12) relating to patent applications are not available to the public.

(4) Pending trademark applications are not open to general inspection (37 C.F.R. 2.27).

(5) The procedures for requesting records not disclosed to the public as part of the regular informational activities of the Patent Office, or not included in the material described in Section F, supra, or whose disclosure is not provided for or precluded by the regulations cited in paragraphs (1), (2), (3) and (4) of this section, are prescribed in 37 C.F.R. 1.15.

EDWARD J. BRENNER,
Date: Sept. 12, 1967. *Commissioner of Patents.*

Published in 32 F.R. 13830, Oct. 4, 1967

[843 O.G. 1567]

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(11) POST CARD RECEIPT REMINDER

Applicants and their attorneys or agents are reminded of the provision in Section 717.01(a) (now Section 503) of the Manual of Patent Examining Procedure relating to the use of post cards as "receipts" of papers filed in the Patent Office.

If a receipt for any paper filed in the Patent Office is desired, it may be had by enclosing with the paper a self-addressed post card identifying the paper. The Patent Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to match the paper with the application or other document to which it is to be associated. For example, the document should be identified by the applicant's name(s), Serial No., filing date, appeal number, interference number, etc., and the paper should be identified by specifying the type thereof, viz, affidavit, amendment, appeal, application papers, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

When papers for more than one document are filed under a single cover a return post card should be attached to the paper for *each* document for which a receipt is desired.

RICHARD A. WAHL,
Nov. 21, 1968. *Assistant Commissioner.*

[857 O.G. 667]

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(12) OFFICE ACTION—FIRST PAGE FORM

The printed form POL–326 formerly used as the first page of the first Office action, 845 O.G. 1205, has been revised.

The new form is now being attached to all Office actions up to and including final rejections.

RICHARD A. WAHL,
Jan. 22, 1969. *Assistant Commissioner.*

[859 O.G. 677]

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(13) OFFICIAL PATENT OFFICE MAILING ADDRESS REMAINS WASHINGTON, D.C.

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of *any* communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Feb. 20, 1969. *Director of Administration.*

[860 O.G. 662]

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(14) ORDERS FOR COPIES OF FOREIGN PATENTS AND/OR PUBLISHED APPLICATIONS

Some foreign countries are not publishing their patents and/or applications in numerical order. Since the U.S. Patent Office will begin supplying orders for copies of these foreign documents from master microfilm reels made up on weekly or other periodic publishing sequences, effective immediately all orders must include the country, patent or application number, and the publication date (if known) of the ordered document. Reference should be made to Section 901.05(a) of the Manual of Patent Examining Procedure to assist in determining the publication date of the commonly encountered foreign patents and applications.

W. R. ARMSTRONG,
Aug. 21, 1969. *Director, Office of Patent Services.*

[866 O.G. 685]

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(15) GROUP NUMBER SHOULD APPEAR ON COMMUNICATIONS RELATING TO PENDING APPLICATIONS

It is again requested that the Group number be typed on amendments and other communications relating to pending applications in order to expedite the handling of mail and to conserve manpower. The number of the Group should be placed on the right-hand side, opposite the Serial Number or name of applicant. In view of the vast amount of mail, continued careful attention to these details will do much toward avoiding delay in handling of mail.

C. A. KALK,
Nov. 6, 1969. *Director of Administration.*

[869 O.G. 345]

(16) TRANSMITTAL FORMS

As a convenience to attorneys and to standardize processing, forms have been developed for use in transmitting (1) new applications (PO–1082) and (2) amendments adding claims (PO–1083). These forms were approved by a Notice appearing in the Federal Register, November 26, 1969, and are designated 37 CFR 3.51 and 3.52 (869 OG 1033). Attorneys who desire to use these forms may obtain them without charge from the Correspondence and Mail Branch or the Receptionist in Building 3 in Crystal Plaza.

RICHARD A. WAHL,
Jan. 2, 1970. *Assistant Commissioner.*

[870 O.G. 1040]

(17) OFFICE ACTIONS

Effective December 1, 1970, applicants or their attorney or agent will be provided with one carbon copy of all Office actions, and the provision of additional or other reproductions of the ribbon copy will be discontinued.

Heretofore, the Office has provided one or two copies of the examiner's action, depending upon the nature of the action. The practice of furnishing more than one copy will be discontinued and, effective with the above change, the applicant will be furnished one copy of all examiner actions.

RICHARD A. WAHL,
Oct. 21, 1970. *Assistant Commissioner.*

[880 O.G. 740]

(18) IDENTIFICATION FOR APPLICATION CORRESPONDENCE

The Office is continuing to experience difficulty in matching incoming papers with the corresponding application files. This applies especially to responses to Office Actions, powers of attorney, changes of address, status letters, requests for extensions of time, and petitions.

A very necessary part of a complete identification of a pending application is the three-digit Group or Art Unit number, e.g., 110 or 111. Frequently, the Group Art Unit number is entirely omitted, or there are errors in this number. In the latter situation the error often occurs as a result of the case having been reassigned within the Office, and the communication is directed to an Examining Group other than that indicated in the most recent Office Action.

Where the Group Art Unit number is entirely omitted, the routine operations of the Application Branch must be interrupted solely for the purpose of determining the location of the application so that the communication can be properly routed. Under these circumstances the efficiency of the Application Branch is impaired and the incoming paper is delayed in reaching its proper destination. Where such papers are not essential to compliance with a statutory period or time limit for response, they may be returned for completion to identify the location of the files.

To assist the Office in expediting its business, it is requested that ALL papers relating to a pending application include the following information:

1. Serial number (checked for accuracy),
2. Group Art Unit number (copied from filing receipt or most recent Office Action),
3. Filing date,
4. Name of the Examiner who prepared the most recent Office Action.
5. Title of the invention.

To further reduce the burden on the Application Branch and the Examining Groups, it is also requested that the submission of additional or supplemental papers on a newly filed application be deferred until a filing receipt has been received. In the same vein, it would be appreciated if the filing of additional papers, relating to an allowed application were deferred until a notice of allowance (POL–85) was received.

If the above suggestions are adopted the processing of both new and allowed applications could proceed more efficiently and promptly through the Patent Office.

RICHARD A. WAHL,
Mar. 5, 1971. *Assistant Commissioner.*

[885 O.G. 2]

(19) IDENTIFICATION FOR APPLICATION CORRESPONDENCE

The Patent Office has been receiving an excessively large amount of application correspondence having incorrect identifying data, such as incorrect application serial numbers and incorrect Group Art Unit numbers. Attention is invited to the Notice of March 5, 1971 (885 O.G. 2), which sets forth the identifying data which should be included on all papers relating to a pending application. The failure to correctly identify the application to which a paper pertains delays or precludes the matching of the paper with the application, and may result in an inappropriate action being taken in the application, e.g., application being considered abandoned for failure to respond. Particular attention should be paid to the use of the correct application serial number and the correct Group Art Unit number (copied from the most recent Office action).

WILLIAM FELDMAN,
Oct. 2, 1973. *Deputy Assistant Commissioner for Patents.*

[915 O.G. 1164]

(20) NEW DECLARATION FORM

To facilitate electronic data input and to expedite processing of new patent applications, a new declaration form has been devised.

Single copies of the new form are available without charge for direct use or for reproduction purposes and may be picked up from the receptionist in Building No. 3 of the Patent Office at Crystal Plaza. Written requests for the form will be filled only if directed to the Commissioner of Patents, Office of Information Services, Washington, D.C., 20231. A stamped, self-addressed envelope must be enclosed.

RICHARD A. WAHL,
May 28, 1971. *Assistant Commissioner.*

[887 O.G. 1840]

(21) NEW SOLE-JOINT DECLARATION FORM

The sole declaration form, PO–1147, announced by the notice of May 28, 1971 (887 O.G. 1840) has been revised to permit its use in either sole or joint inventor applications. The revised form comprises two pages to provide space for the additional information. In most applications, only page 1 will be necessary, in which case only that page need be signed and submitted. Page 2 would be used only where insufficient space is available on page 1 to fully furnish the required information. If page 2 is used, page 1 need not be signed, and *all* signatures should appear on page 2.

Where appropriate, the present "sole" declaration form may be used.

Specific instructions appear on the form.

Single copies of the new form are available without charge for direct use or for reproduction purposes and may be picked up from the receptionist in Building No. 3 of the Patent Office at Crystal Plaza. Written requests for the form will be filled only if directed to the Commissioner of Patents, Office of Information Services, Washington, D.C., 20231. A stamped, self-addressed envelope must be enclosed.

RICHARD A. WAHL,
Apr. 17, 1972. *Assistant Commissioner.*

[898 O.G. 738]

(22) DECLARATION AND POWER OF ATTORNEY FORM PO–1147 (REVISED) (3–72)

A revised Declaration and Power of Attorney Form, PO–1147 (Revised) (3–72), was recently issued and is supplied for use as a master copy for reproduction purposes. Experience with the revised form indicates that some confusion has been caused by the reference to "effective" filing date in item 600 of the form. The form is, therefore, being reprinted to delete the word "effective" from the descriptive language appearing in item 600. Persons who have copies of the old form may use the form by deleting the word "effective" before the form is reproduced. In this connection it is noted that the

word "effective" appears three times in item 600, once on page 1 and twice on page 2.

RICHARD A. WAHL,
Aug. 28, 1972. *Assistant Commissioner for Patent Examining.*

[902 O.G. 1172]

(23) DISTRIBUTION OF NEW DECLARATION FORM PO–1147 (REVISED)

In a recent issue of the OFFICIAL GAZETTE (898 O.G. 738) we announced the availability of a new Sole-Joint Declaration Form, PO–1147. The distribution was limited to single copies of the form. We are pleased to report that use of the form has resulted in increased efficiency in processing newly filed applications.

In order to encourage greater use of the form, we now can furnish larger quantities without charge. Accordingly, distribution will be made in single copies or in multiples of 10 forms. Since our supply is limited, only orders for reasonable quantities can be filled.

The forms may be obtained from the receptionist in the lobby of Building 3 at our Arlington, Va. location or by mail request. The latter should be addressed to:

Commissioner of Patents
Washington, D.C. 20231,
Attn: Form Distribution

ROBERT GOTTSCHALK,
Sept. 11, 1972. *Commissioner of Patents.*

[903 O.G. 368]

(24) PATENT APPLICATION BRANCH SERVICE

In order to expedite the processing of newly filed applications, improve the efficiency of the Office, and assist in the effort to normally dispose of patent applications within 18 months of their filing date, cooperation from the patent community is solicited with respect to recent procedural modifications.

Prior to examination concerning patentability, patent applications are now examined for compliance with formal requirements, and actions are mailed requiring correction of stated informalities. Many inquiries have arisen concerning the effect of such actions. Since the actions concerning correction of informalities include the setting of a period for response, failure to respond within the period set results in abandonment of the application.

Inquiries directed to the Application Branch, either in person or by telephone, concerning patent applications should not be made during the morning hours between 8:30 and 10:30.

The letter of transmittal accompanying the filing of continuing applications, particularly streamlined continuations and Rule 147 divisionals, should include such additional information as the identification by serial number of the parent application, its status, and location in the Patent Office. The supplying of this information will permit the processing of these new applications more rapidly than at present.

When a new application is filed with a request to transfer drawings under Rule 88, the application papers should include drawing prints to enable the Application Branch to process the case before transfer of the formal drawings is effected.

RICHARD A. WAHL,
June 1, 1971. *Assistant Commissioner.*

[887 O.G. 1841]

(25) NEW PROCEDURES FOR PROCESSING ORDERS FOR CERTIFIED COPIES WHEN MATERIAL IS NOT AVAILABLE FOR PHOTOCOPYING

The previous practice of the Document Services Division in handling customer's requests for certified copies of material not yet processed in the Application Division has been to return the order to the customer requesting him to reorder 30 days after receipt of his Official Filing Receipt.

In order to improve this procedure, as of August 2, 1971, all requests for certified copies of material that has not been processed in the Application Division and has not been placed on microfiche are processed in the following manner.

1. Each order is given a control number.
2. The customer is notified as follows:
   a. He will receive an acknowledgment of the receipt of his order.
   b. He will be given the assigned control number for ease of reference in case an inquiry is necessary.
   c. He will be informed that his order will be held in the Document Services Division until the copy can be reproduced from microfiche. No definite time can be given.
3. An Advance Order File has been set up in the Service Unit of the Document Services Division and the microfiche is checked daily.

For further service to its customers, the Document Services Division will furnish the Serial Number and Filing Date of the latest application available on microfiche for publication in the OFFICIAL GAZETTE.

ROBERT J. RISH,
Aug. 2, 1971. *Acting Assistant Commissioner for Administration.*

[890 O.G.301]

(26) STATUS INQUIRIES

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

New Applications

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL–327 in *every* case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL–327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL–85) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL–327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the OFFICIAL GAZETTE are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

Amended Applications

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily

obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

In General

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office clerical support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1031) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

RICHARD A. WAHL,
Nov. 24, 1971. *Assistant Commissioner of Patents.*

[893 O.G. 810]

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(27) PATENTED FILES SERVICE

Delays have frequently been experienced in receiving files and other papers ordered from the Federal Records Center at Suitland, Md. To provide better service in this respect, the Patent Office has initiated its own pick up and delivery service to and from the storage facility. Customer orders are now normally filled within two days.

Orders for files may be placed at the Attorneys and Record Room Desk, Building 4, Room 1D01. There is no charge for this service.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

[893 O.G. 807]

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(28) PUBLIC RECORDS CERTIFICATION DESK

The certification desk, located in Crystal Plaza in the Attorneys and Record Room, Building 4, Room 1D01, provides "on-the-spot" certifying service. This desk handles walk-in requests for certified copies of file wrappers, patented applications, patents, and selected papers from patented application files. The usual fee for this service ($1.00 per certification) may be applied at this location in the form of a paid cash order form, obtainable at the Cashier's Office adjacent the lobby of Building #2.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

[893 O.G. 810]

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(29) CUSTOMER RELATIONS CENTER

A Customer Relations Center, located in Crystal Plaza adjacent to the Public Search Room, Building 4, Rooms A102 and A103, has been established to provide a central customer complaint and inquiry service. The Center is staffed with six highly experienced employees who process inquiries concerning copies of U.S. patent documents previously ordered but not received. This Center handles not only walk-in but telephonic, and written requests for assistance as well. In addition to improving customer relations, this service is intended to relieve the primary customer service areas (Patent Copy Sales, Document Services, and Reference Order Branch), and Patent Office officials, or interruptions and irregular demands on their time.

The telephone number for this service is (703) 557–2003.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

[893 O.G. 807]

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(30) ACCESS TO PATENT APPLICATION AND INTERFERENCE FILES

In order to insure that access to patent application and interference files is given only to persons who are entitled thereto or who are specially authorized to have access under Rule 14 of the Rules of Practice in Patent Cases, and to insure also that the file record identifies any such specially authorized person who has been given access to a file, the following practice will be observed by all personnel of the Patent Office:

1. Access, as provided for in the Rules of Practice, will be given on *oral request* to any applicant, patentee, assignee, or attorney or agent of record in an application or patent only upon *proof of identity* or upon *recognition* based on personal acquaintance.
2. Where a power of attorney or authorization of agent was given to a registered firm prior to July 2, 1971, access will be given upon oral request as in paragraph 1 above to any registered member or employee of the firm who has signatory power for the firm.
3. Unregistered employees of attorneys or agents, public stenographers, and all other persons not within the provisions of paragraphs 1 and 2 above will be given access only upon presentation of a *written authorization for access* signed by a person specified in paragraph 1 above, which authorization will be entered as a part of the official file.

ROBERT GOTTSCHALK,
Nov. 24, 1971. *Acting Commissioner of Patents.*

[893 O.G. 810]

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(31) PATENT OFFICE SERVICES

ADDENDUM TO OFFICIAL GAZETTE NOTICE OF AUG. 8, 1972 (901 O.G. 412)

We wish to call attention to a situation discovered during our study and analysis of the patent copy service. We found that there has been a lack of effective controls affecting orders for printed copies of patents placed by letter, including cash order, and deposit account order forms.

Effective controls for Patent Office coupon orders have been established.

We are now implementing a similar procedure for orders placed by letter, including cash order, and deposit account order forms. It is possible, however, that a few orders submitted in this way in the last few months have gone astray. Accordingly, if you placed such requests for patent copies prior to July 15, 1972, and have not yet received those copies, we suggest that you submit, to the address given below, a follow-up communication which should identify the original request by date and include the Patent Numbers originally ordered.

Address inquiries to:

Director
Office of Public Services
U.S. Patent Office
Washington, D.C. 20231

ROBERT GOTTSCHALK,
Sept. 7, 1972. *Commissioner of Patents.*

[903 O.G. 368]

(32) PATENT OFFICE SERVICES

A notice concerning delays in furnishing Certified Copies was published Aug. 8, 1972 (901 O.G. 412). This notice announced the initiation of a special "Expedited Service" for obtaining copies of pending applications promptly. As indicated in the notice, this special service would be terminated upon restoration of our regular service to an acceptable level.

I am pleased to report that our regular service has been restored to an acceptable level and this special program is being terminated.

However, our efforts to improve our services in these areas will continue. We have made progress, but are not resting on that record. We recognize that there are still problems of accuracy and quality in the filling of orders. These are currently being examined in an effort to bring about necessary improvements.

Thank you for your cooperation and understanding during this difficult period.

ROBERT GOTTSCHALK,
May 30, 1973. *Commissioner of Patents.*

[911 O.G. 1130]

(33) CHANGE IN COPY CERTIFICATION PROCEDURES

Pursuant to 28 USC 1744 the Patent Office provides "copies of letters patent or of any records, books, papers or drawings belonging to the Patent Office and relating to patents, authenticated under the seal of the Patent Office and certified by the Commissioner of Patents, or by another officer of the Patent Office authorized to do so by the Commissioner. . . ." In the interest of improved efficiency the Patent Office will, effective immediately, change its method of certifying copies of the recited materials. Thereafter, the certificate and the copy will be secured together by a staple in lieu of the ribbon currently employed. The new procedures will retain the use of the Patent Office seal and the certification by the Commissioner of Patents or other authorized officer in keeping with the requirements of the above statute.

RICHARD A. WAHL,
Sept. 20, 1972. *Acting Commissioner.*

[903 O.G. 368]

(34) PATENT OFFICE BUSINESS HOURS

This procedure is being published to bring to the attention of the public security provisions concerning the Patent Office premises and Patent Office files.

The public is reminded that the Patent Office working hours are 8:30 a.m. to 5:00 p.m. Monday through Friday, excluding legal holidays in the District of Columbia. Outside these hours, only Patent Office employees are authorized to be in areas of the Patent Office other than the Public Search Rooms. Of course, a member of the public engaged in a discussion of business with an Office employee may be invited by the employee to stay beyond Office hours to conclude the discussion.

The hours for the Public Search Room are 8:00 a.m. to 8:00 p.m., and the hours for the Trademark Search Room are 8:00 a.m. to 6:00 p.m. Monday through Friday, excluding legal holidays in the District of Columbia.

During working hours, all applicants, attorneys, and other members of the public should announce their presence to the Office personnel in the area of their visit. In the Examining Groups, visitors should inform the group receptionist of their presence before visiting other areas of the Group.

RENE D. TEGTMEYER,
Sept. 27, 1973. *Acting Commissioner of Patents.*

[915 O.G. 1164]

(35) EARLIER NOTIFICATION OF SERIAL NUMBERS

Various procedures are being revised in an effort to reduce pre-examination processing time for newly filed patent applications and to implement the new Patent Application Locator and Monitoring System. The first change which has been effected results in the assignment of serial numbers in the Correspondence and Mail Division immediately after mail has been opened.

With the implementation of this new procedure, it is no longer necessary to submit two self-addressed post cards when early notification of the serial number is desired. If a self-addressed post card is submitted with a patent application, that post card will be stamped with both the receipt date and serial number prior to returning it to the addressee.

The identifying data on the post card should include: (1) applicant's name(s); (2) title of invention; (3) number of pages of specification, claims, and sheets of drawing; (4) whether oath or declaration used; and (5) amount and manner of paying the fee.

A return post card should be attached to *each* patent application for which a receipt is desired.

This notice supersedes the notice of March 10, 1971 (884 O.G. 970).

WILLIAM I. MERKIN,
Assistant Commissioner for Administration.
August 9, 1972.

[902 O.G. 2]

(36) NOTICE TO APPLICANTS, ATTORNEYS AND AGENTS RE PRELIMINARY CLASSIFICATION OF PATENT APPLICATIONS

The Patent Office is initiating a program for expediting newly filed applications through pre-examination steps. This program requires your cooperation to attain the desired result—a reduction in processing time.

We are, therefore, asking you to include a preliminary classification on newly filed applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example, "Proposed class 2, subclass 129."

This program is voluntary and the classification submitted will be accepted as advisory in nature. The final class and subclass assignment remains the responsibility of the Patent Office.

RICHARD A. WAHL,
Aug. 11, 1972. *Acting Commissioner of Patents.*

[902 O.G. 376]

(37) CLASSIFICATION OF U.S. PATENTS

The National Technical Information Service of the U.S. Department of Commerce has announced the availability of a new publication in microfilm format entitled "Classification of U.S. Patents" (Patent Office publication PAT 001.1–7306–M). This publication consists of a listing of all U.S. patents and related items in ascending numeric sequence together with the official U.S. classification of each patent, including both the original and all cross-reference classifications. It is offered for sale in the form of a 16mm negative reel microfilm in plain reels or reels packed in any of three types of cartridges.

The current edition lists all patents issued through June 30, 1973 and all reclassifications through December 1972 and includes "Additional Improvement" (AI), design patents (D), reissue design patents (RD), plant patents (PP), reissue patents (RE), patents issued prior to 1836 (X), reissue X patents (RX), defensive publications (T) and patents. It can be purchased in (1) individual reels ($6.00) or cartridges (three types, all $8.00), (2) a complete set of 18 reels ($74.00) or cartridges ($110) or (3) a partial set of the

last 7 reels (12–18) in reels ($30.00) or cartridges ($44.00). See the detailed price table which follows:

CLASSIFICATION OF U.S. PATENTS

(PAT 001.1–7306–M)
June 1973 Edition

Reel No(s).	NTIS accession No.	Beginning patent number	Ending patent number	Price*
Complete set of 18.	COM–73–11470.			{P=$74.00 {M, R, T=$110.00
Partial set of last 7.	COM–73–11471.	2,244,100	3,742,516	{P=$30.00 {M, R, T=$44.00
Individual reels.				{P=$6.00 {M, R, T=$8.00
1	COM–73–11472	{AI2–A1318 {D1–D227,517 {PP1–PP119	PP119	
2	COM–73–11473	{PP120–PP3,369 {RD301–RD25,414 {RE2–RE27,689 {RX35–RX1,217M {T628,881–T910,010 {X1–X9741M {–192,199	192,199	
3	COM–73–11474	192,200	420,199	
4	COM–73–11475	420,200	648,199	
5	COM–73–11476	648,200	876,199	
6	COM–73–11477	876,200	1,104,199	
7	COM–73–11478	1,104,200	1,332,199	
8	COM–73–11479	1,332,200	1,560,199	
9	COM–73–11480	1,560,200	1,788,199	
10	COM–73–11481	1,788,200	2,016,099	
11	COM–73–11482	2,016,100	2,244,099	
12	COM–73–11483	2,244,100	2,472,099	
13	COM–73–11484	2,472,100	2,700,099	
14	COM–73–11485	2,700,100	2,927,999	
15	COM–73–11486	2,928,000	3,155,199	
16	COM–73–11487	3,155,200	3,375,699	
17	COM–73–11488	3,375,700	3,597,399	
18	COM–73–11489	3,597,400	3,742,516	

*Prices quoted depend on how film is supplied. The code letters represent the types of service available, as follows:
P=Plain reels in cardboard boxes.
M=Reels in 3M cartridges.
R=Reels in Recordak cartridges.
T=Reels in "Thread Easy" Magazines.
NOTE.—When ordering, the appropriate code letter should be appended to the NTIS accession number, e.g., COM–73–11470–M.

Since this microfilm publication will be updated periodically, customers will always be supplied the latest edition available at the time of the order. To order, customers should write to the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22151, citing the NTIS accession number and description of each item ordered. Payment may be by check or money order or charged to the customer's NTIS deposit account or American Express.

WILLIAM I. MERKIN,
Nov. 21, 1973. *Assistant Commissioner for Administration.*

[917 O.G. 808]

(38) AVAILABILITY OF U.S. PATENT CLASSIFICATION MICROFILM

The Patent Office announces the availability of its microfilm publication, "U.S. Patent Classification—Subclass Listing" (Patent Office Publication PAT–002.1–7312–M), which is offered for sale through the National Technical Information Service (NTIS).

This microfilm presents in sequence by the classes and subclasses of the official U.S. Classification, the patent numbers of the U.S. patents which are classified as "originals" and as "cross-references" in each of the subclasses. Within each subclass, the patent numbers are listed in numerical sequence. A symbol appears in conjunction with patent numbers to denote those patents which are cross-reference classified in a subclass.

All U.S. patents issued through December 1973 (patent number 3,781,913 and reissue patent number 27,855) are included in this publication. It supersedes the microfilm listing, "Cumulative Index to the Classification of Patents," dated February 1969.

The entire publication consists of 7 reels of 16mm negative microfilm which is priced at $30 in plain reels and at $44 in cartridges. A choice of 3M or Recordak cartridges or "Thread Easy" magazines is offered. Individual reels may be purchased at $6 in plain reel or $8 in cartridge form.

Orders must specify the NTIS accession number given below and, also, show, by the appropriate letter code,* the choice of the optional forms in which the buyer desires to receive the microfilm.

Reel Number	Accession No.	Classes	
1–7	COM–74–10740–*	All	
1	COM–74–10741–*	2–58	
2	COM–74–10742–*	59–106	
3	COM–74–10743–*	107–165	
4	COM–74–10744–*	166–220	
5	COM–74–10745–*	222–260	(to subclass 501.15)
6	COM–74–10746–*	260–317	(remainder of 260)
7	COM–74–10746–*	318–444	

*NOTE.—Insert the letter code representing choice of one of the following optional forms.
P=Plain reel ($30 for entire file; $6 per reel).
M=Reel in 3M cartridge ($44 for entire file; $8 per reel).
R=Reel in Recordak cartridge (same).
T=Reel in "Thread Easy" magazine (same).

Address orders to National Technical Information Service, U.S. Department of Commerce, Springfield, Va. 22151, enclosing payment in check or money order or authorization to charge the amount of the order to the buyer's NTIS deposit account or American Express card, giving the account number.

WILLIAM I. MERKIN,
May 17, 1974 *Assistant Commissioner for Administration.*

[923 O.G. 384]

(39) LISTING OF ERRATA IN THE PATENT OFFICIAL GAZETTE

Effective December 3, 1974, Errata for Classification sequence will be printed at the beginning of each of the major sections: Reissues, Plant Patents, Patents (including General and Mechanical, Chemical, Electrical), and Design Patents.

ROBERT J. RISH,
Oct. 25, 1974. *Acting Assistant Commissioner for Administration.*

[928 O.G. 886]

RECORDS AND FILES

(40) ACCESSIBILITY OF ASSIGNMENT RECORDS

In view of a number of inquires as to the manner in which Rule 1.12 of the Patent Office Rules of Practice, as amended August 23, 1965 (819 O.G. 443) is to be applied, the procedure which it is planned to follow in certain types of cases is set forth below.

1. Assignments relating to applications for registration of trademarks will be open to public inspection as heretofore.

2. The Office will not open certain parts only of an assignment document to public inspection. If such a document contains two or more items, any one of which, if alone, would be open to such inspection, then the entire document will be open. Thus, if an assignment covers either a trademark or a patent in addition to one or more patent applications, it will be available to the public ab initio; and if it covers a number of patent applications, it will be so available as soon as any one of them is patented. Assignments relating only to one or more pending applications for patent will not be open to public inspection.

3. If the application on which a patent was granted is a division or continuation of an earlier case, the assignment records of that case will be open to public inspection; similar situations involving continuation in part applications will be considered on their individual merits.

4. Assignment records relating to reissue applications will be open to public inspection.

EDWARD J. BRENNER,
Commissioner.

Dec. 15, 1965.

[822 O.G. 769]

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(41) NOTIFICATION RE: CONFLICT IN ASSIGNMENT IN CERTAIN APPLICATIONS

Effective September 12, 1966, Assignment Branch will discontinue mailing notification in cases where there is a conflict in assignment between an original application and its divisional, continuation, substitute, or continuation-in-part application.

Assignments from original applications are applied without charge ONLY to divisional, continuation, or substitute applications where the date of the assignment is prior to the filing date of the later-filed application. (Continuation-in-part applications require separate assignments if they are to be issued to the assignee.)

Practitioners are reminded of the provisions of Rule 334. Unless an assignment is filed at or prior to the date of payment of the issue fee, the patent will normally be issued in the name of the inventor.

Section 306 of the Manual of Patent Examining Procedures will be amended appropriately.

W. R. ARMSTRONG,
Director, Office of Patent Services.

Concurred:
(signed) R. A. WAHL,
Assistant Commissioner.

[830 O.G. 442 (Sept. 12, 1966)]

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(42) RECORDING OF INSTRUMENTS

Effective April 1, 1967, the Patent Office will accept and record legible certified copies of original assignments or other instruments.

The certified copy, if not in the English language, will not be recorded unless accompanied by a translation signed by the translator.

Certification shall be to the fact that the instrument submitted is a true copy of the original and shall be made by a notary public or, if in a foreign country, by a consular officer of the United States or an officer authorized to administer oaths and authenticated by a consular officer of the United States.

RICHARD A. WAHL,
Assistant Commissioner.

Mar. 3, 1967.

[836 O.G. 1111]

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(43) PUBLIC SEARCH ROOM

Due to budget and personnel limitations which took effect on July 1, 1968, it has become necessary to adopt measures that are consistent with these limitations and that will permit continuance of Patent Office activities and facilities without curtailing their use to the public. Among these measures is the service of returning to the files those patent bundles used by the attorneys and the general public in the Public Search Room.

Beginning August 19, 1968, in order that free access to the stacks may be maintained, persons drawing patent bundles from the search files will be expected to return them to the file slots from which they were withdrawn.

This will enable the personnel in the Public Search Room to concentrate their time and efforts on the necessary updating and storage maintenance for improvement of the integrity of the search files.

RICHARD A. WAHL,
Assistant Commissioner.

Aug. 12, 1968.

[854 O.G. 287]

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(44) ASSIGNMENT INFORMATION FOR ISSUE FEE TRANSMITTAL FORM

Rule 334, revised November 4, 1969, requires . . . "At the time of payment of the issue fee, a statement must be furnished indicating whether or not an assignment has been filed with the Patent Office. In the event an assignment has been filed, such statement must include the name of the assignee and indicate whether or not an acknowledgment of a recorded assignment has been received from the Patent Office."

The Issue Fee Transmittal Form POL-85b revised December 1969, provides space (Item 2) for Assignment Data which should be completed to comply with the Rule. Unless an assignee's name and address are identified in Item 2 of the Issue Fee Transmittal Form POL–85*b*, the patent will issue to the applicant. Assignment data printed on the patent will be based on information so supplied.

A request for correction of error arising from failure to correctly provide this Assignment Data in Item 2 will be considered only under the provisions of Rule 323 for a certificate of correction of applicant's mistake.

The recording of instruments in the Assignment Branch is not affected by this notice.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Sept. 28, 1970.

[879 O.G. 988]

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(45) CERTIFIED COPIES OF APPLICATIONS AS ORIGINALLY FILED

The Patent Office has discontinued placing the assignments of record on the file wrapper of patent applications, except when a title report is requested or upon allowance of the case. Accordingly, the copies of applications prepared in response to requests for a certified copy of a patent application as filed, will no longer include an indication of assignments. Applicants desiring an indication of assignments of record should request separately certified copies of assignment documents.

ROBERT J. RISH,
Acting Assistant Commissioner for Administration.

[887 O.G. 1042 (6–22–71)]

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(46) NUMERICAL COLLECTION OF U.S. PATENTS IN MICROFORM FOR PUBLIC SEARCH ROOM

Effective immediately, the Patent Office will implement a program to make available for use, in the Public Search Room, a complete numerical collection of printed U.S. Patents on 16 mm negative microfilm.

The program will require approximately six months for completion. An adequate number of reader-printers will be installed. The present numerical paper collection (bound volumes) will be removed from the mezzanine area when microfilm for the same patent numbers is available.

RENE D. TEGTMEYER,
Acting Commissioner of Patents.

[915 O.G. 378 (10–9–73)]

FEES AND PAYMENT OF MONEY

(47) REVISION OF "DISCONTINUANCE OF DEPOSIT ACCOUNT SERVICE FOR SALE OF PATENT COPIES"

In view of the difficulties experienced by many of its customers, the Patent Office is revising the Notice appearing in the December 1, 1964, issue of the *Official Gazette of the U.S. Patent Office*. This Notice—Discontinuance of Deposit Account Service for Sale of Patent Copies—is revised to except certain types of patent copy orders.

The Patent Office will now accept lists of fifty (50) or more numbers arranged in numerical sequence to be charged to Deposit Accounts. Service charges, such as Special Handling and Air Mail postage for these orders, may also be charged to Deposit Accounts.

C. A. KALK,
Director of Administration.

July 15, 1965.

[818 O.G. 1207]

(48) FEES IN CONNECTION WITH AMENDMENTS TO PATENT APPLICATIONS

This notice supplements the Notice of September 10, 1965, 818 O.G. 1207, September 28, 1965, relating to the administration of the act of July 24, 1965, Public Law 89–83, increasing certain fees payable to the United States Patent Office.

That act provides for the payment of additional fees on presentation of certain claims during the prosecution of applications. This provision applies in the case of applications filed on or after October 25, 1965, the effective date of the act. In such cases, when any amendment is filed which presents additional claims over the total number covered by fees previously paid, it should be accompanied by any additional fees due.

As in the case of claims presented after an application is filed and before first action, described in the Notice of September 10, 1965, when independent claims are subsequently presented so that the number of uncanceled independent claims in the application as amended exceeds the number of such claims paid for, an additional fee of $10 is due for each such additional claim. Similarly, an additional fee of $2 is due for each claim added in excess of the number of uncanceled claims, independent or dependent, already paid for.

Treatment of Amendments Unaccompanied by Fees Due

Amendments filed during and after the prosecution of an application and not accompanied by the entire fee due upon such filing will be treated as follows:

If such an amendment is filed in reply to an Office action it will be regarded as not being fully responsive thereto and the practice set forth in section 714.03 of the Manual of Patent Examining Procedure will be followed, care being taken to avoid any abuse of this practice by attorneys as, for example, by habitual submission of such amendments without fees or with insufficient fees.

If an amendment which is not filed in response to an Office action is of such a nature as to require a fee and is not accompanied by the full fee required, it will not be entered and the applicant will be so advised.

Amendment During Interference

An amendment filed in connection with a motion to add counts to an interference (Rule 233) must be accompanied by the claim or claims to be added and with the appropriate fees, if any, which would be due if the amendments were to be entered. It may be that the amendments will never be entered. Only upon the granting of the motion is it necessary for the other party or parties to present the claims, but the fees must be paid whenever presented.

Claims which have been submitted in response to a suggestion by the Office for inclusion in an application must be accompanied by the fee due, if any.

Amendment After Requirement for Restriction

After a requirement for restriction or election of species, nonelected claims will be included in determining the fees due in connection with a subsequent amendment unless such claims are canceled.

Refunds

Money paid in excess or by mistake in connection with an amendment will be refunded in the usual manner.

Amendments affecting the claims cannot serve as the basis for granting any refund.

Money paid in connection with the filing of a proposed amendment will not be refunded by reason of the nonentry of the amendment.

EDWARD J. BRENNER,
Jan. 13, 1966. *Commissioner of Patents.*

[823 O.G. 814]

(49) DEPOSIT ACCOUNTS—STATUTORY FEE CHARGES

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and opposition, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdrawing of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically, and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once overdrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
Feb. 23, 1966. *Commissioner.*

[824 O.G. 1200]

(50) PRACTICE IN THE USE OF ACCOUNTS FOR PAYMENT OF STATUTORY FEES

In the OFFICIAL GAZETTES of March 15, 22, and 29, there appeared copies of an announcement by the Commissioner providing for a trial use of accounts established under Rule 25 for the payment of statutory fees. A number of questions have come up in connection with the use of accounts in the payment of these fees prescribed by Public Law 89–83 and, in the interest of uniform practice, publication of a statement is warranted.

A general direction by an applicant or attorney to charge to an account these fees as they arise in any application prosecuted by the applicant, the attorney, or the firm will not be effective for such a purpose. Authority to make charges will be limited to a particular application.

A separate direction to charge shall be filed for each fee. Each such direction to charge a fee shall be transmitted on a separate sheet of paper and, in the case of fees based on modification of claims shall include the best estimate of the fee due. Failure to include such an estimate provides the basis for a refusal to enter any amendment transmitted therewith, as an incomplete response. Where variable fees are involved inclusion of a direction to charge or credit a deficiency or overpayment would appear appropriate.

An issue fee will not be charged to an account until a notice of allowance has been forwarded and a reply to that notice received.

For the purposes of determining the fee due the Patent Office, a claim will be treated as dependent if it contains reference to one other claim in the application. A claim determined to be dependent by this test will be entered if the fee paid reflects this determination. This does not, however, prevent the rejection of such a claim as improper, if, in fact, it is not a dependent claim.

EDWARD J. BRENNER,
Apr. 12, 1966. *Commissioner of Patents.*

[825 O.G. 1183]

(51) DEPENDENT CLAIMS

Although the notice published on October 5, 1965, in 819 O.G. 3, explained that for the purposes of the present fee bill, Public Law 89–83, approved July 24, 1965, the Patent Office will consider a proper dependent claim as being one

which incorporates by reference a single preceding claim, whether independent or dependent, and includes all the limitations of the claim so incorporated, there appears to be still some uncertainty on this matter and it is therefore thought to be desirable to elaborate it.

Since the initial determination, for fee purposes, as to whether a claim is dependent must be made by persons other than examiners, it is necessary, at that time, to accept as dependent virtually every claim which refers to another claim, without determining whether there is actually a true dependent relationship. Such acceptance does not, however, preclude a subsequent holding by the examiner that a claim is not a proper dependent claim.

An essential characteristic of a proper dependent claim is that it shall include every limitation of the claim from which it depends (35 U.S.C. 112) or in other words that it shall not conceivably be infringed by anything which would not also infringe the basic claim. Thus, for example, if claim 1 recites the combination of elements *a*, *b*, *c* and *d*, a claim reciting the structure of claim 1 in which *d* was omitted or replaced by *e* would not be a proper dependent claim, even though it placed further limitations on the remaining elements or added still other elements.

The fact that a dependent claim which is otherwise proper might require a separate search or be separately classified from the claim on which it depends would not render it an improper dependent claim, although it might result in a requirement for restriction.

The fact that the independent and dependent claims are in different statutory classes does not, in itself, render the latter improper. Thus, if claim 1 recites a specific product a claim for the method of making the product of claim 1 in a particular manner would be a proper dependent claim since it could not be infringed without infringing claim 1. Similarly, if claim 1 recites a method of making a product, a claim for a product made by the method of claim 1 could be a proper dependent claim. On the other hand, if claim 1 recites a method of making a specified product, a claim to the product set forth in claim 1 would not be a proper dependent claim if the product might be made in other ways.

Any claim which is in dependent form but which is so worded that it does not, in fact, include every limitation of the claim on which it depends, will be required to be cancelled as not being a proper dependent claim; and cancellation of any further claim depending on such a dependent claim will be similarly required. The applicant may thereupon amend the claims to place them in proper dependent form, or may redraft them as independent claims upon payment of any necessary additional fee.

The basis for the difference in fees between independent and dependent claims is the fact that the examination of a dependent claim is normally a comparatively simple matter after the claim on which it depends has been examined. This relationship, however, obtains only when the independent claim represents a bona fide attempt to define the invention and to distinguish it from the known prior art. Accordingly, the presentation of a claim which on its face is obviously unpatentable or indefinite, as basis on which other claims are dependent, is not considered to be proper practice. One example of such a practice involves the use of a claim drawn to "all the features of novelty herein disclosed," with other claims, which actually recite the features thought to be novel, being dependent on the first. A similarly objectionable arrangement would involve the use, as a basic independent claim, of a claim merely reciting "a wheeled vehicle," "an amino acid" or "an internal combustion engine."

Such a practice as that just described involves not only an attempt to evade the free provisions of Public Law 89–83, but also the presentation of a claim known by the attorney or agent presenting it to be unpatentable. Any registered patent attorney or agent who makes a practice of presenting claims of this character may be called on to explain his actions.

(signed) EDWARD J. BRENNER,
June 8, 1966. *Commissioner.*

[828 O.G. 1]

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(52) DEPOSIT ACCOUNTS

The practice instituted on May 1, 1966, pursuant to the notice of February 23, 1966 (824 O.G. 1200), whereby statutory fees may be charged against deposit accounts, and such accounts are closed if overdrawn, has resulted in certain difficulties for the Patent Office and deposit account holders. It has been decided therefore to modify that practice as indicated below.

As was pointed out in that notice, the charging of a fee against an overdrawn account cannot be considered as payment of the fee until a proper balance is restored or payment is made in some other way. Accordingly, deposit account holders who charge such fees must assume the risk of losing vital dates if they do not maintain a proper balance in their accounts at all times.

Apart from this, however, the overdrawing of an account places a burden on the Patent Office, particularly where a number of items are charged after the overdraft occurs, and it is appropriate that those who are responsible for causing such a condition should bear the cost of correcting it. In view of this fact, and of the hardship frequently caused if an account is permanently closed, the practice of closing deposit accounts merely because they are overdrawn will be discontinued, effective August 1, 1966. In lieu thereof an overdrawn account will be immediately suspended and no charges will be accepted against it until a proper balance is restored, together with a payment of ten dollars to cover the work done by the Patent Office incident to suspending and reinstating the account and dealing with charges which may have been made in the meantime. It is expected, however, that reasonable precautions will be taken in all cases to avoid overdrafts, and if an account is suspended repeatedly it will be necessary to close it.

Similarly, because of the burden placed on the Patent Office incident to the operation of deposit accounts, a charge of ten dollars will be made for opening each new account.

EDWARD J. BRENNER,
June 23, 1966. *Commissioner.*

[828 O.G. 377]

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(53) PRACTICE RE: FILING FEES

It is suggested that attorneys review the notices pertaining to filing fees under the new Fee Act of 1965 appearing at 818 O.G. 1207, September 28, 1965, and 823 O.G. 814, February 15, 1966.

The filing fee includes the basic $65 fee plus an additional fee corresponding to the number and type of claims presented. For filing fee purposes the Patent Office considers any claim that specifically refers back to another claim to be a dependent claim, regardless of statutory class.

It appears that some attorneys are submitting filing fees in excess of their computations, apparently to insure against loss of a filing date should their computations be in error. This is neither necessary nor desirable. The Application Branch has been authorized to accept all applications, otherwise acceptable, if the basic fee of $65 is submitted, and if the deficiency is no more than $25 of the required filing fee, and to require payment of the deficiency within a stated period upon notification of the deficiency. Practitioners are urged to discontinue submitting excessive fees, since processing such fees has proved costly to the Office, and since applicants are believed to be adequately protected against loss of filing date by the practice outlined above.

There appears to be an erroneous impression that a Rule 147 divisional case requires a filing fee based on the claims in the parent case. The 818 O.G. 1207 notice specifically states that an amendment filed with a Rule 147 case will be effective to reduce the number of claims upon which the fee is based.

RICHARD A. WAHL,
June 30, 1966. *Assistant Commissioner.*

[828 O.G. 1085]

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(54) ISSUE FEES

Effective March 31, 1969, the Patent Office will discontinue the practice of estimating the number of printed pages of specification in advance of printing.

Instead, a Minimum Issue Fee will be due three months from the date of the Notice of Allowance. This minimum fee, which consists of $100 plus $10 for the first page of printed specification plus $2 for each sheet of drawing, will be shown on the Notice of Allowance which has been revised to reflect the new practice.

After the patent is printed and the number of pages of specification is found to exceed the one already paid for, a Notice of Balance of Issue Fee Due will be attached to the Grant. Failure to pay this balance within THREE MONTHS FROM THE DATE OF THE PATENT will result in lapse of the patent.

Practitioners are urged to use the special fee transmittal forms provided with the Notice of Allowance and the Notice of Balance of Issue Fee Due.

The above fees will not be accepted from anyone other than the applicant, his assignee, attorney, or a party in interest as shown by the records of the Patent Office.

ATTENTION is also directed to the space designated on the Notice of Allowance Transmittal form PO–85a wherein the name of the assignee is required *if it is desired to have the patent issued to an assignee or assignees.*

RICHARD A. WAHL,
Jan. 31, 1969. *Assistant Commissioner.*

[860 O.G. 2]

(55) CALCULATION OF ISSUE FEES

Effective October 1, 1974, the Patent Office in calculating the balance of issue fee due, after payment of the Base Issue Fee specified by the Notice of Allowance, shall charge at the rate of $10 a page, as provided in 35 USC 41, for each printed page of specification (including claims) for which payment has not theretofore been received. As the Base Issue Fee includes a $10 charge for one printed page of specification, a balance of fee will be due for each patent which consists of more than one printed page. A "page" consists of one side of a printed sheet containing any amount of specification (including claims). A notification of the Balance of Issue Fee Due will be mailed in each such case along with the original patent grant.

The notice of February 4, 1970 published in the OFFICIAL GAZETTE [872 O.G. 1] and reproduced in the current (*Jan. 1, 1974*) "Consolidated Listing of Recent Official Gazette Notices . . ." [Item 53] is rescinded as of close of business September 30, 1974.

WILLIAM I. MERKIN,
Aug. 1, 1974. *Assistant Commissioner for Administration.*

[925 O.G. 1084]

(56) FEES IN CONNECTION WITH AMENDMENTS TO PATENT APPLICATIONS

An increasing number of amendments are being received with improper fees. Because of the problems occasioned thereby, it is suggested that attorneys review the notices pertaining to fees and the Office practice related thereto (823 O.G. 814, Feb. 15, 1966; 828 O.G. 1, July 5, 1966; 828 O.G. 1085, July 26, 1966). Attention is invited to the new form 3.52, Amendment transmittal letter, for additional guidance in computing fees (869 O.G. 1036, Dec. 23, 1969). This form may be obtained from the Receptionist in Building 3 of Crystal Plaza. The new loose-leaf rule book, which will soon be available, includes a sample form (No. 52) also. When submitting the new amendment transmittal letter please include the Art Unit and Examiner's name.

The above notices and new form may also be found as items 24, 25, 29 and 147 in the consolidated listing of notices in the OFFICIAL GAZETTE of Jan. 13, 1970.

RICHARD A. WAHL,
Mar. 13, 1970. *Assistant Commissioner.*

[873 O.G. 1]

(57) EXAMINER AMENDMENTS—CHARGE AGAINST DEPOSIT ACCOUNTS

The Examiner's Amendment practice is hereby extended to include charges against deposit accounts under special conditions. Charges under this practice shall not exceed $50.00 for each patent application.

In order to expedite the issuance of a patent on an application otherwise ready for allowance, an Examiner's Amendment will be acceptable to make a charge against a deposit account provided prior approval is obtained from the attorney or agent. When such an Examiner's Amendment is prepared, the prior approval will be indicated by identification of the name of the authorizing party, the date and type (personal or telephone) of authorization, the purpose for which the charge is made (drawing correction, additional claims, etc.), and the deposit account number. Further identifying data, if deemed necessary and requested by the attorney, should also be included in the Examiner's Amendment.

RICHARD A. WAHL,
Mar. 17, 1970. *Acting Commissioner of Patents.*

[873 O.G. 667]

(58) CHANGES IN CHARGES FOR COPIES

The Patent Office is announcing a change in the charges for copies of materials produced on coin-operated copiers located at Crystal Plaza. The charge will be 15¢ per page.

This change will be effective within the next 30 to 45 days due to the engineering changes necessary to accommodate the difference in number and value of coins.

The Patent Office will monitor this change for a period of six months to: (1) Evaluate effects on other services, equipment utilization, materials, and facilities; and, (2) Ensure that the new charge of 15¢ per page will enable the Patent Office to fully recover the cost of operating the copiers.

At the end of the period, the data obtained will be evaluated with a view to continuance or discontinuance of the reduced rate.

ROBERT GOTTSCHALK,
June 6, 1972. *Commissioner of Patents.*

[899 O.G. 1230]

POWERS OF ATTORNEY

(59) WITHDRAWAL OF ATTORNEY

Attorneys and agents are reminded that by notice published April 18, 1967, in 837 O.G. 667, requests for permission to withdraw as attorney or agent of record, pursuant to Rule 36, should be submitted in triplicate (original and two copies) and should indicate thereon the attorney or agent's present mailing address. The Group No. should also appear on all such requests.

JOSEPH F. NAKAMURA,
Sept. 27, 1973. *Acting Solicitor.*

[915 O.G. 1164]

(60) RULE 34—APPEARANCE BEFORE BOARD OF APPEALS

Applicants and their attorneys are reminded that Rule 34 provides that *before* any attorney or agent will be allowed to "take action of *any kind* in any application or proceeding, a written power of attorney or authorization . . . must be filed in the particular application or proceeding." [Italics added.]

Henceforth this rule will be strictly enforced. This applies to attorneys appearing at oral hearings before the Board of Appeals.

EDWIN L. REYNOLDS,
July 26, 1967. *First Assistant Commissioner.*

[841 O.G. 669]

(61) RECOGNITION OF ATTORNEYS AND AGENTS

In connection with the revised rules concerning recognition of attorneys and agents, published in the Federal Register July 2, 1971 (36 F.R. 12616), the Patent Office will operate under the following procedures.

The Patent Office will continue to give effect to powers of attorney and authorizations of agent naming firms filed, with respect to patent applications, before the effective date of the rules, July 2, 1971.

As stated in the revised rules, powers of attorney or authorizations of agent naming firms of attorneys or agents filed in patent applications after July 2, 1971 will not be recognized. However, the Patent Office will construe any such powers or authorizations filed prior to October 1, 1971, as a direction to consider the address of the firm as the correspondence address for the application.

The privilege afforded by revised Rule 34(a) of the Rules of Practice in Patent Cases as to recognition of registered attorneys and agents not of record will apply to all applications whether filed before or after the effective date. Attention is called to the requirement of Rule 34(a) that a paper filed by a registered patent attorney or agent in any application in which he is not of record should include both his signature and registration number.

Powers of attorney and authorizations of agent under Rule 34(b) naming one or more registered individuals may continue to be made.

As prior to the effective date of the revised rules, where a paper is hand delivered to the Office and that paper has been properly signed by a registered attorney or agent whether or not of record in the particular case involved, a duplicate copy may be appropriately marked by the Patent Office employee receiving the original and returned to the person delivering the paper. As an example, a duplicate copy of a request for an extension of time to make a response may be marked approved, initialed or signed, and returned to the delivering person.

WILLIAM E. SCHUYLER, Jr.,
Aug. 5, 1971. *Commissioner of Patents.*

[890 O.G. 2]

(62) RECOGNITION OF FIRMS OF ATTORNEYS AND AGENTS

The notice of August 5, 1971, appearing in the OFFICIAL GAZETTE September 7, 1971 (890 O.G. 2) is revised as follows.

The originally announced period terminating October 1, 1971, relating to appointments of firms of attorneys or agents, filed in the Patent Office after July 2, 1971, is hereby extended. Accordingly, until further notice, any power of attorney or authorization of agent naming a firm, received in the Patent Office after July 2, 1971, will be construed as a direction to consider the firm name and address as the correspondence address of the application.

ROBERT GOTTSCHALK,
Sept. 27, 1971. *Acting Commissioner of Patents.*

[891 O.G. 886]

APPLICATION CONTENT

(63) DECLARATION IN LIEU OF OATH—RIBBONING OF PAPERS UNNECESSARY

Recent legislation, 35 U.S.C. 25, and Rule 68 based thereon permit applicants to make a written declaration in lieu of the customary oath or affirmation which accompanies a patent application.

Such a declaration, even if signed in a country foreign to the United States, need not be ribboned to the other papers.

The declaration, like the oath, is an integral part of the application and must be maintained together therewith. When a declaration is used, it is unnecessary to appear before any official in connection with the making of the declaration.

Further details are given in 29 F.R. 18502, Dec. 29, 1964, 811 O.G. 2.

RICHARD A. WAHL,
Mar. 2, 1965. *Superintendent, Patent Examining Corps.*

[813 O.G. 2]

(64) GUIDELINES FOR DRAFTING A MODEL PATENT APPLICATION UNDER THE REVISED RULES

The following guidelines illustrate the preferred layout and content for patent applications. They have been prepared to supplement the amendments to the rules which are effective January 1, 1967. These guidelines are suggested for the applicant's use.

Arrangement and Contents of the Specification

The following order of arrangement is preferable in framing the specification and, except for the title of the invention, each of the lettered items should be preceded by the headings indicated.

(a) Title of the Invention.
(b) Abstract of the Disclosure.
(c) Cross-References to Related Applications (if any).
(d) Background of the Invention.
  1. Field of the Invention.
  2. Description of the Prior Art.
(e) Summary of the Invention.
(f) Brief Description of the Drawing.
(g) Description of the Preferred Embodiment(s).
(h) Claim(s).

(a) *Title of the Invention:* (See Rule 72(a).) The title of the invention should be placed at the top of the first page of the specification. It should be brief but technically accurate and descriptive.

(b) *Abstract of the Disclosure:* (See Rule 72(b), MPEP 608.01(a), and 831 O.G. 1328, October 25, 1966.)

(c) *Cross-References to Related Applications:* (See Rule 78 and MPEP 201.11.)

(d) *Background of the Invention:* The specification should set forth the Background of the Invention in two parts:

(1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions. The statement should be directed to the subject matter of the claimed invention.

(2) Description of the Prior Art: A paragraph(s) describing to the extent practical the state of the prior art known to the applicant, including references to specific prior art where appropriate. Where applicable, the problems involved in the prior art, which are solved by the applicant's invention, should be indicated.

(e) *Summary:* A brief summary or general statement of the invention as set forth in Rule 73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(f) *Brief Description of the Drawing:* A reference to and brief description of the drawing(s) as set forth in Rule 74.

(g) *Description of the Preferred Embodiment(s):* A description of the preferred embodiment(s) of the invention as required in Rule 71. The description should be as short and specific as is necessary to adequately and accurately describe the invention.

Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field to which the invention pertains, form a part of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

(h) *Claim(s):* (See Rule 75.) A claim may be typed with the various elements subdivided in paragraph form. There may be plural indentations to further segregate subcombinations or related steps.

Reference characters corresponding to elements recited in the detailed description and the drawings may be used in conjunction with the recitation of the same element or group of elements in the claims. The reference characters, however, should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. The use of reference characters is to be considered as having no effect on the scope of the claims.

Claims should preferably be arranged in order of scope so that the first claim presented is the broadest. Where separate species are claimed, the claims of like species should be grouped together where possible and physically separated by drawing a line between claims or groups of claims. (Both of these provisions may not be practical or possible where several species claims depend from the same generic claim.) Similarly, product and process claims should be separately grouped. Such arrangements are for the purpose of facilitating classification and examination.

The form of claim required in Rule 75(e) is particularly adapted for the description of improvement type inventions. It is to be considered a combination claim and should be drafted with this thought in mind.

In drafting claims in accordance with Rule 75(e), the preamble is to be considered to positively and clearly include all the elements or steps recited therein as a part of the claimed combination.

Oath

(See Rule 65.) Where one or more previously filed foreign applications are cited or mentioned in the oath, complete identifying data, including the application or serial number as well as the country and date of filing, should be provided.

EDWARD J. BRENNER,
Date: Oct. 12, 1966. *Commissioner of Patents.*

[832 O.G. 5]

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(65) PLANT PATENT APPLICATIONS—FILING DATE

Applicants and their attorneys are reminded that an application for a patent for a plant must include two copies of the specification, Rule 163(b), and two copies of the drawing when in color, Rule 165(b).

Effective immediately, applications for plant patents which fail to include two copies of the specification and two copies of the drawing when in color will be accepted for filing only. The Application Branch will notify the applicant immediately of this deficiency and require the same to be rectified within one month. Failure to do so will result in loss of filing date.

RICHARD A. WAHL,
Nov. 21, 1968. *Assistant Commissioner.*

[857 O.G. 668]

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(66) GUIDELINES FOR INCORPORATION BY REFERENCE IN PATENT APPLICATIONS

An application for a patent may incorporate essential material by reference to a United States patent, or an allowed U.S. application, subject to the conditions set out below. Essential material* is defined as that which is necessary (1) to support the claims, or (2) for adequate disclosure of the invention (35 U.S.C. 112). Material which is essential to the referencing application may not be incorporated by reference to patents issued by foreign countries or to non-patent publications. Essential material may not be incorporated by reference to a patent or application which itself incorporates essential material by reference.

The referencing application must include (1) an abstract, (2) a brief summary of the invention, (3) an identification of the referenced patent or application, (4) at least one view in the drawing in those applications admitting of a drawing, and (5) one or more claims. Where appropriate it would be advisable to direct particular attention to specific portions of the referenced patent or application.

If an application is filed with a complete disclosure, essential material may be cancelled by amendment and the *same* material substituted by reference to a patent or a pending and commonly owned allowed application in which the issue fee has been paid. The amendment must be accompanied by an affidavit executed by the applicant or his attorney or agent of record stating that the material cancelled from the application is the *same* material that has been incorporated by reference.

If an application incorporates essential material by reference to a U.S. patent or a pending and commonly owned allowed U.S. application for which the issue fee has been paid, applicant will be required prior to examination to furnish the Patent Office with a copy of the referenced material together with an affidavit executed by the applicant or his attorney or agent of record stating that the copy consists of the *same* material incorporated by reference in the referencing application.

If an application incorporates essential material by reference to a U.S. patent or a pending and commonly owned application other than one in issue with the fee paid, applicant will be required prior to examination to amend the disclosure of the referencing application to include the material incorporated by reference. The amendment must be accompanied by an affidavit executed by the applicant or his attorney or agent of record stating that the amendatory material consists of the *same* material incorporated by reference in the referencing application.

EDWARD J. BRENNER,
Commissioner.

Approved: Jan. 15, 1969.
JOHN F. KINCAID,
Assistant Secretary for Science and Technology.

Published in 34 F.R. 883; Jan. 18, 1969

[859 O.G. 346]

*Non-essential subject matter may be incorporated by reference to patents issued by the United States or foreign countries, prior filed commonly owned patent applications filed in the United States, and non-patent publications for purposes of indicating the background of the invention or illustrating the state of the art.

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(67) INCORPORATION BY REFERENCE—FILING DATE

In clarification of the Notice of December 30, 1968, appearing in the OFFICIAL GAZETTE of February 11, 1969, the following amplification is made.

The filing date of any application wherein essential material is incorporated by reference to a foreign patent or to a publication will not be affected because of the presence of such reference. In such a case, as well as any other case which improperly incorporates essential material by reference, the applicant will be required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit executed by the applicant or his attorney or agent of record stating that the amendatory material consists of the *same* material incorporated by reference in the referencing application.

ERRATUM

Attention is directed to the error in the above-mentioned notice appearing at 859 O.G. 346. Please delete the phrase, "a U.S. patent or", which was erroneously printed in the second line of the last paragraph.

RICHARD A. WAHL,
Mar. 7, 1969. *Assistant Commissioner.*

[A Notice covering this same subject, in slightly different form, has been published in 34 F.R. 5555, Mar. 22, 1969.]

[861 O.G. 680]

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(68) PHOTOCOPIES OF APPLICATIONS

Many of the patent application papers received by the Patent Office are copies of the original, ribbon copy. These are acceptable if, in the opinion of the Office, they are legible and permanent. Legibility includes ability to be photocopied and photomicrographed so that suitable reprints can be made. This requires a high contrast, with black lines and a white background. Gray lines and/or a gray background sharply reduce photo reproduction quality.

Applicants should make every effort to file patent applications in a form that is clear and reproducible. The Office may accept for filing date purposes papers of reduced quality but will require that acceptable copies be supplied for further processing.

Additionally, legibility of some application papers becomes impaired due to abrasion or aging of the printed material during examination and ordinary handling of the file. It may be necessary to require that clear, legible copies be furnished at later stages after filing, especially when preparing for issue.

RICHARD A. WAHL,
Jan. 28, 1970. *Assistant Commissioner.*

[872 O.G. 341]

(69) DIVISIONAL APPLICATION PAPERS

In the interest of expediting the processing of newly filed divisional applications, filed as a result of a restriction requirement, applicants are requested to include the appropriate Patent Office classification on the papers submitted.

The appropriate classification for the divisional application may be found in the office communication of the parent case wherein the requirement was made. It is suggested that this classification designation be placed in the upper right hand corner of the letter of transmittal accompanying these divisional applications.

RICHARD A. WAHL,
June 5, 1970. *Assistant Commissioner of Patents.*

[875 O.G. 702]

(70) REDUCTION IN PATENT APPLICATION DISCLOSURE

Notice of proposed Guidelines for Preparation of Patent Application Disclosure was published in the Federal Register of January 14, 1969 (34 F.R. 524), and in the OFFICIAL GAZETTE of the Patent Office of February 4, 1969 (859 O.G. 1). Comments from the general public were invited.

After consideration of comments received, new guidelines are deemed unnecessary, even though the average length of specification seems to be increasing. Applicants and their attorneys are reminded that 35 U.S.C. 112 requires inventions to be described "in such full, clear, concise, and exact terms as to enable any person skilled in the art * * * to make and use the same * * *." To satisfy the "concise" requirement, lengthy and unnecessary descriptive detail should be avoided.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: July 24, 1970.

MYRON TRIBUS,
Assistant Secretary for Science and Technology.

[F.R. Doc. 70-9862; Filed July 30, 1970; 8:45 a.m.]

35 F.R. 12296, July 31, 1970

[878 O.G. 1]

(71) USE OF METRIC SYSTEM OF MEASUREMENTS IN PATENT APPLICATIONS

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements when using printed patents as research and prior art search documents, all patent applicants are strongly encouraged to use either (1) only metric (S.I.) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Systeme International d'Unites," the French name for the International System of Units, a modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,
July 1, 1974. *Commissioner of Patents.*

[924 O.G. 1104]

(72)

TITLE 37

Patents, Trademarks, and Copyrights

CHAPTER I
PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1
RULES OF PRACTICE IN PATENT CASES

PART 2
RULES OF PRACTICE IN TRADEMARK CASES

Addition of Metric (S.I.) Equivalents

The Commissioner of Patents is revising §§ 1.84, 1.253, 2.31, 2.52, 2.56 and 2.57 of the rules of practice to set forth and encourage use of the metric system of measurements in papers submitted to the Patent Office. These changes provide dual dimensions in both the patent and trademark rules of practice.

Since the revision of these sections makes no change in practice, and merely adds an indication of the metric equivalents, procedure for public comment thereon is deemed unnecessary. Therefore, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), as amended October 5, 1971 (85

Stat. 364), and section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123), 37 CFR Parts 1 and 2 are hereby amended as follows:

1. In § 1.84, paragraphs (b), (d)(1), (f), (j) and (l) are revised to read as follows:

§ 1.84 Standards for drawings.

* * * * * * *

(b) *Size of sheet and margins.* The size of a sheet on which a drawing is made must be exactly 8½ by 14 inches (21.6 by 35.6 cm.). One of the shorter sides of the sheet is regarded as its top. The drawing must include a top margin of 2 inches (5.1 cm.) and bottom and side margins of one-quarter inch (6.4 mm.) from the edges, thereby leaving a "sight" precisely 8 by 11¾ inches (20.3 by 29.8 cm.). Margin border lines are not permitted. All work must be included within the "sight." The sheets may be provided with two one-quarter inch (6.4 mm.) diameter holes having their centerlines spaced eleven-sixteenths inch (17.5 mm.) below the top edge and 2¾ inches (7.0 cm.) apart, said holes being equally spaced from the respective side edges.

* * * * * * *

(d) *Hatching and shading.* (1) Hatching should be made by oblique parallel lines, which may be not less than about one-twentieth inch (1.3 mm.) apart.

* * * * * * *

(f) *Reference characters.* The different views should be consecutively numbered figures. Reference numerals (and letters, but numerals are preferred) must be plain, legible and carefully formed, and not be encircled. They should, if possible, measure at least one-eighth of an inch (3.2 mm.) in height so that they may bear reduction to one twenty-fourth of an inch (1.1 mm.); and they may be slightly larger when there is sufficient room. They must not be so placed in the close and complex parts of the drawing as to interfere with a thorough comprehension of the same, and therefore should rarely cross or mingle with the lines. When necessarily grouped around a certain part, they should be placed at a little distance, at the closest point where there is available space, and connected by lines with the parts to which they refer. They should not be placed upon hatched or shaded surfaces but when necessary, a blank space may be left in the hatching or shading where the character occurs so that it shall appear perfectly distinct and separate from the work. The same part of an invention appearing in more than one view of the drawing must always be designated by the same character, and the same character must never be used to designate different parts.

* * * * * * *

(j) *Arrangement of views.* All views on the same sheet must stand in the same direction and should, if possible, stand so that they can be read with the sheet held in an upright position. If views longer than the width of the sheet are necessary for the clearest illustration of the invention, the sheet may be turned on its side so that the two-inch (5.1 cm.) margin is on the right hand side. One figure must not be placed upon another or within the outline of another.

* * * * * * *

(l) *Extraneous matter.* An inventor's, agent's, or attorney's name, signature, stamp, or address, or other extraneous matter, will not be permitted upon the face of a drawing, within or without the margin,

except that identifying indicia (attorney's docket number, inventor's name, number of sheets, etc.) should be placed within three-fourths inch (19.1 mm.) of the top edge and between the hole locations defined in paragraph (b) of this section. Authorized security markings may be placed on the drawings provided they be outside the illustrations and are removed when the material is declassified.

* * * * * * *

2. In § 1.253, paragraphs (e) and (f) are revised to read as follows:

§ 1.253 Copies of the testimony.

* * * * * * *

(e) When the copies of the record are submitted in printed form, they shall be printed in 11-point type and adequately leaded; the paper must be opaque and unglazed; the size of the page shall be 7⅝ by 10¼ inches (19.4 by 26 cm.); the size of the printed matter shall be 4⅛ by 7⅛ inches (10.6 by 18.2 cm.); and they shall be bound to lie flat when opened. Twenty-five additional copies for the United States Court of Customs and Patent Appeals, should appeal be taken, may also be filed; if no such appeal be taken, the twenty-five copies will be returned to the party filing them.

(f) When the copies of the record are submitted in typewritten form, they must be clearly legible on opaque, unglazed, durable paper approximately 8½ by 11 inches (21.6 by 27.9 cm.) in size (letter size) and one of the three copies must be a ribbon copy, but need not be executed by the certifying officer. (The certified transcript may be a properly executed carbon copy. See § 1.277.) The typing shall be on one side of the paper, in not smaller than pica-type; and double-spaced with a margin of 1½ inches (3.8 cm.) on the left-hand side of the page. The sheets shall be bound at their left edges, in such manner to lie flat when opened, in a volume or volumes of convenient size (approximately 100 pages per volume is suggested) provided with covers. Documentary exhibits should not be included in bound volumes of testimony. Multigraphed or otherwise reproduced copies conforming to the standards specified will be accepted.

* * * * * * *

3. Section 2.31 is revised to read as follows:

§ 2.31 Application must be in English.

The application must be in the English language and plainly written on but one side of the paper. It is deemed preferable that the application be on legal or letter-sized paper, typewritten double spaced, with at least a one and one-half inch (3.8 cm.) margin on the left-hand side and top of the page.

4. In § 2.52, paragraphs (c) and (d) are revised to read as follows:

§ 2.52 Requirements for drawings.

* * * * * * *

(c) *Size of paper and margins.* The size of the sheet on which a drawing is made must be 8 to 8½ inches (20.3 to 21.6 cm.) wide and 11 inches (27.9 cm.) long. One of the shorter sides of the sheet should be regarded as its top. When the figure is longer than the width of the sheet, the sheet should be turned on its side with the top at the right. The size of the mark must be such as to leave a margin of at least 1 inch (2.5 cm.) on the sides and bottom of the paper and at least 1 inch (2.5 cm.) between it and the heading.

(d) *Heading.* Across the top of the drawing, beginning one inch (2.5 cm.) from the top edge and not exceeding one-fourth of the sheet, there should be placed a heading, listing in separate lines, applicant's name, applicant's post office address, the dates of first use, and the goods or services recited in the application (or typical item of the goods or services if a number are recited in the application). This heading may be typewritten.

* * * * * * *

5. Section 2.56 is revised to read as follows:

§ 2.56 Specimens.

The application must include five specimens of the trademark as actually used on or in connection with the goods in commerce. The specimens shall be duplicates of the actually used labels, tags, or containers, or the displays associated therewith or portions thereof, when made of suitable flat material and of a size not to exceed 8½ inches (21.6 cm.) wide and 13 inches (33.0 cm.) long.

* * * * * * *

6. Section 2.57 is revised to read as follows:

§ 2.57 Facsimiles.

When, due to the mode of applying or affixing the trademark to the goods, or to the manner of using the mark on the goods, or to the nature of the mark, specimens as above stated cannot be furnished, five copies of a suitable photograph or other acceptable reproduction, not to exceed 8½ inches (21.6 cm.) wide and 13 inches (33.0 cm.) long, and clearly and legibly showing the mark and all matter used in connection therewith, shall be furnished.

Effective date. These amendments shall become effective May 6, 1974.

Dated: March 25, 1974.

C. MARSHALL DANN,
Commissioner of Patents.

Approved: March 25, 1974.

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc.74-7796 Filed 4-3-74; 8:45 am]

Rules of Practice—OG 922/No. 2

PRIORITY APPLICATIONS

(73) REISSUE APPLICATIONS—FOREIGN PRIORITY

A "claim" for the benefit of an earlier filing date in a foreign country under 35 U.S.C. 119 must be made in a reissue application even through such a claim was made in the application on which the original patent was granted. However, no additional certified copy of the foreign application is necessary. The procedure is similar to that for "Continuing Applications" in the last paragraph of MPEP 201.14(b).

The heading on printed copies will not be carried forward to the reissue from the original patent. Therefore, it is important that the file wrapper be endorsed under "Claims Foreign Priority."

RICHARD A. WAHL,
Acting Superintendent Patent Examining Corps.

[807 O.G. 579 (Oct. 20, 1964)]

(74) FILING OF PRIORITY PAPERS

In view of the shortened periods for prosecution leading to allowances, it is recommended that priority papers be filed as early as possible. Although Rule 55 permits the filing of priority papers up to and including the date for payment of the final fee, it is advisable that such papers be filed promptly after filing the application. Frequently priority papers are found to be deficient in material respects such as, for example, the failure to include the correct certified copy and there is not sufficient time to remedy the deficiency. Occasionally a new oath may be necessary where the original oath omits the reference to the foreign filing date for which the benefit is claimed. The early filing of priority papers would thus be advantageous to applicants in that it would afford time to explain any inconsistencies that exist or to supply any additional documents that may be necessary.

It is also suggested that a pencil notation of the serial number of the corresponding U.S. application be placed on the priority papers.

RICHARD A. WAHL,
Dec. 1, 1965. *Assistant Commissioner.*

[821 O.G. 1261]

(75) EFFECTIVE DATE OF UNITED STATES PATENT

In section 706.02, delete penultimate paragraph.

Rewrite section 715.01 to read:

The effective date of a United States Patent for use as a prior art reference is not affected by the foreign filing date to which the patentee may be entitled under 35 U.S.C. 119. *In re Hilmer*, 833 O.G. 13, 149 USPQ 480 (CCPA 1966); *Lilly et al.* v. *Brenner*, 153 USPQ 95 (C.A.D.C. 1967). The reference patent is effective as of the date the application for it was filed in the United States (35 U.S.C. 102(e) and 103). *Hazeltine Research, Inc. et al.* v. *Brenner*, 824 O.G. 8 (U.S. Supreme Court 1965).

RICHARD A. WAHL,
Apr. 5, 1967. *Assistant Commissioner.*

[838 O.G. 1]

(76) PATENT HEADINGS

As a service to the public, beginning with the issue of January 16, 1968, the heading of the printed patent will include all identifying parent data of continuation-in-part applications as is now the practice in continuation, divisional, substitute, and reissue applications. It should be noted, however, that inclusion of this information in the heading does not necessarily indicate that the claims are entitled to the benefit of the earlier filing date.

The above practice will not change the procedure with regard to assignments as set forth in the first sentence of paragraph 2 of Section 306 of the M.P.E.P.

RICHARD A. WAHL,
Dec. 18, 1967. *Assistant Commissioner.*

[846 O.G. 337]

(77) CHAINS OF CONTINUING APPLICATIONS

In view of the decision of the Court of Customs and Patent Appeals in *In re Henriksen* (158 USPQ 224) the application of 35 U.S.C. 120 will no longer be limited to a chain of three successively filed continuing cases.

Accordingly, Change Notice 12–8 is rescinded.

RICHARD A. WAHL,
Aug. 9, 1968. *Assistant Commissioner of Patents.*

[854 O.G. 559]

(78) FOREIGN PRIORITY OF CONTINUING APPLICATION

If the Examiner is aware of the fact that the parent of a continuing application has fully complied with the requirements of 35 U.S.C. 119 and is therefore entitled to the benefit of the filing date of an earlier filed foreign application, he should direct it to the applicant's attention in an Office action, as in the following exemplary language:

"Applicant is reminded that in order to be entitled to priority based on papers filed in parent application Serial No. _____ under 35 U.S.C. 119, a claim for such priority must be made in this application. In making such claim, applicant may simply call attention to the fact that a certified copy of the foreign application is in the parent application (M.P.E.P. 201.14(b))."

RICHARD A. WAHL,
Aug. 30, 1968. *Assistant Commissioner.*

[855 O.G. 1]

(79) GERMANY: NEW REQUIREMENT FOR SUBMISSION OF COPY OF ORIGINAL APPLICATION IN CONVENTION CASES

Under Section 27 of the German Patent Law which came into effect October 1, 1968, all applicants submitting a claim of priority in Germany under the Paris Union will be required to submit a copy of the application upon which the claim for priority is based. The U.S. Patent Office has been advised by the German Office that the copy need *not* be certified correct by the Office in which the application was originally filed.

Accordingly, for U.S. applicants, one method of complying with the new law would be to accompany the German filing with a copy of the prior U.S. applications as filed. This copy can be produced by the applicant himself.

If the applicant does not submit the copy at the time of filing, the German Office will issue, within two months after the German filing, a request to submit the copy. Failure to submit the required copy within two months after notification results in loss of the priority claim.

With respect to application on file in Germany prior to October 1, 1968, the following applies:

Copies of the original application will not be required for those applications already on file if the serial number of the application on which the priority claim is based had been communicated to the German Patent Office prior to October 1, 1968.

With regard to applications on file prior to October 1, 1968, for which the U.S. serial number is communicated after October 1, 1968, the request for the copy of the U.S. application will be made together with the notice preceding the laying open to public inspection of the file of the German application.

GERALD D. O'BRIEN,
Jan. 13, 1968. *Assistant Commissioner.*

[859 O.G. 345]

(80) PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY

Entry Into Force of Articles 1–12

The Director General of the World Intellectual Property Organization announced on May 25, 1973, the deposit by the United States of letters of ratification of Articles 1–12 of the Paris Convention for the Protection of Industrial Property of 1883, as revised at Stockholm on July 14, 1967, with the declaration of applicability to all territories and possessions of the United States, including the Commonwealth of Puerto Rico. By operation of the Convention, Articles 1–12 will enter into force with respect to the United States on August 25, 1973, three months after the date of the above notification by the Director.

To carry into effect provisions of the Stockholm Revision of the Paris Convention, the United States has enacted Public Law 92–358, July 28, 1972, which in Section (1) amends 35 U.S.C. 119 to accord under certain circumstances rights of priority to a U.S. patent application based on an earlier filed application for an inventor's certificate and in Section (2) amends 35 U.S.C. 102(d) to provide that under certain circumstances an inventor's certificate becomes a statutory bar to the grant of a U.S. patent.

By the terms of this statutory enactment, Section (1) will enter into force with respect to the United States on the date when Articles 1–12 of the Stockholm Revision of the Paris Convention of March 20, 1883 come into force with respect to the United States, which will be August 25, 1973. A Patent Office rule change implementing this section of the public law by the addition of a new paragraph (c) to § 1.55 (37 CFR 1.55(c)) has been adopted and has been published in the FEDERAL REGISTER, Vol. 38, No. 71, on April 13, 1973.

This statutory enactment also provides that Section (2) will take effect six months from the date when Articles 1–12 of the Stockholm Revision of the Paris Convention come into force with respect to the United States. Accordingly, this date will be February 25, 1974.

The full text of Public Law 92–358, dated July 28, 1972 together with the implementing Patent Office regulation, are reproduced below:

PUBLIC LAW 92–358, JULY 28, 1972

To carry into effect a provision of the Convention of Paris for the Protection of Industrial Property, as revised at Stockholm, Sweden, July 14, 1967.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 119 of title 35 of the United States Code, entitled "Patents" is amended by adding at the end thereof the following paragraph:

"Applications for inventors' certificates filed in a foreign country in which applicants have a right to apply, at their discretion, either for a patent or for an inventor's certificate shall be treated in this country in the same manner and have the same effect for purpose of the right of priority under this section as applications for patents, subject to the same conditions and requirements of this section as apply to applications for patents, provided such applicants are entitled to the benefits of the Stockholm Revision of the Paris Convention at the time of such filing."

Sec. 2. Subsection 102(d) of title 35 of the United States Code is amended to read as follows:

"(d) the invention was first patented or caused to be patented; or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or."

Sec. 3. (a) Section 1 of this Act shall take effect on the date when Articles 1–12 of the Paris Convention of March 20, 1883, for the Protection of Industrial Property, as revised at Stockholm, July 14, 1967, come into force with respect to the United States and shall apply only to applications thereafter filed in the United States.

(b) Section 2 of this Act shall take effect six months from the date when Articles 1–12 of the Paris Convention of March 20, 1883, for the Protection of Industrial Property, as revised at Stockholm, July 14, 1967, come into force with respect to the United States and shall apply to applications thereafter filed in the United States.

TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

CHAPTER 1—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

§ 1.55 *Serial number and filing date of application.* * * *

(c) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his attorney or agent, when submitting a claim for such right as specified in paragraph (b) of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he has satisfied himself that to the best of his knowledge the applicant, when filing his application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

Dated: August 20, 1973.

RENE D. TEGTMEYER,
Acting Commissioner of Patents.

Approved: August 22, 1973.
BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 73-18260; Filed 8-28-73; 8:45 a.m.]

[914 O.G. 1156]

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(81) SECTION 102(D), AS AMENDED, EFFECTIVE AS OF FEB. 25, 1974

Public Law 92-358, dated July 28, 1972, amended subsection 102(d) of Title 35 United States Code, to provide that a prior grant of an inventor's certificate, in addition to prior patenting of the invention in a foreign country, may give rise to a statutory bar. As amended, the subsection reads as follows:

"(d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or".

By the terms of the statute, the above amendment shall take effect six months from the date when Articles 1–12 of the Paris Convention of March 20, 1883, for the Protection of Industrial Property, as revised at Stockholm, July 14, 1967, come into force with respect to the United States and shall apply to applications filed thereafter in the United States. Since the treaty entered into force with respect to the U.S. on August 25, 1973, the above amendment became effective February 25, 1974.

C. MARSHALL DANN,
March 5, 1974. *Commissioner of Patents.*

[921 O.G. 2]

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(82) INVENTOR'S CERTIFICATES IN OATH OR DECLARATION

[37 CFR Part 1]

Extension of Time for Filing Written Comments

The Patent Office is extending from August 1, 1974 to September 30, 1974. the closing date for the submission of written comments on its proposed revision of Title 37, Code of Federal Regulations, §§ 1.65 and 1.67, to require listing of inventor's certificates and applications therefor in oaths and declarations. Notice of proposed rulemaking was published in the Federal Register issued July 2, 1974, 39 FR 24375.

RENE D. TEGTMEYER,
July 23, 1974. *Acting Commissioner of Patents.*

Approved:
BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 74-17999; Filed 8-6-74; 8:45 am]

39 F.R. 28439

PROPOSED LISTING OF CERTAIN PRIOR APPLICATIONS

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6) as amended October 5, 1971 (85 Stat. 364), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.65 and 1.67.

Interested persons are invited to present their views, objections, recommendations, or suggestions in writing in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231 on or before August 1, 1974. No oral hearings will be held. Written comments or suggestions will be available for examination by interested persons at Crystal Plaza Building 3, Room 11C17*a*, Arlington, Virginia.

The proposed rule change is intended to implement the enforcement of that portion of Pub. L. 92–358, dated July 28, 1972, which relates to 35 U.S.C. 102(d). The text of Pub. L. 92–358 was printed at 918 O.G. 19. This Public Law amended subsection 102(d) of Title 35 of the United States Code to prohibit granting of a patent if the invention "was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for * * * inventor's certificate filed more than twelve months before the filing of the application in the United States." The amendment to 35 U.S.C. 102(d) became effective on February 25, 1974.

In order that all such prohibitions will be called to the attention of the Patent Office, it is proposed that §§ 1.65 and 1.67 of 37 CFR be amended to require the listing of certain prior applications for inventor's certificates in the same manner as certain prior applications for patents must be listed now.

The paragraphs, if amended as proposed, would read as follows:

§ 1.65 *Statement of applicant.*

(a)(1) The applicant, if the inventor, must state that he verily believes himself to be the original and first inventor or

discoverer of the process, machine, manufacture, composition of matter, or improvement thereof, for which he solicits a patent; that he does not know and does not believe that the same was ever known or used in the United States before his invention or discovery thereof, and shall state of what country he is a citizen and where he resides and whether he is a sole or joint inventor of the invention claimed in his application. In every original application the applicant must distinctly state that to the best of his knowledge and belief the invention has not been in public use or on sale in the United States more than one year prior to his application or patented or described in any printed publication in any country before his invention or more than one year prior to his application, or patented or made the subject of an inventor's certificate in any foreign country prior to the date of his application on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in this country. He shall state whether or not any application for patent or inventor's certificate on the same invention has been filed in any foreign country, either by himself, or by his legal representatives or assigns. If any such application has been filed, the applicant shall name the country in which the earliest such application was filed, and shall give the day, month, and year of its filing; he shall also identify by country and by day, month, and year of filing, every such foreign application filed more than twelve months before the filing of the application in this country. (2) This statement (i) must be subscribed to by the applicant, and (ii) must either (*a*) be sworn to (or affirmed) as provided in § 1.66, or (*b*) include the personal declaration of the applicant as prescribed in § 1.68. See § 1.153 for design cases and § 1.162 for plant cases.

* * * * *

§ 1.67 *Supplemental oath or declaration for matter not originally claimed.*

(a) When an applicant presents a claim for matter originally shown or described but not substantially embraced in the statement of invention or claim originally presented, he shall file a supplemental oath or declaration to the effect that the subject matter of the proposed amendment was part of his invention; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than one year before his application, or in public use or on sale in the United States for more than one year before the date of his application, that said invention has not been patented or made the subject of an inventor's certificate in any foreign country prior to the date of his application in this country on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in the United States, and has not been abandoned. Such supplemental oath or declaration should accompany and properly identify the proposed amendment, otherwise the proposed amendment may be refused consideration.

* * * * *

Dated: June 26, 1974.

C. MARSHALL DANN,
Commissioner of Patents.

Approved:

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 74-15115; Filed 7-1-74; 8:45 am]

39 F.R. 24375

[926 O.G. 3]

(Pending—No Final Action Taken)

DRAWINGS

(83) PHOTOPRINTS AS DRAWINGS—FILING DATE ONLY

Effective September 1, 1964 the Application Branch is authorized and directed to accept all applications in which photoprints have been submitted in lieu of formal drawings, and to forward them to the Examiner, who will notify the applicant immediately that the application has been accepted *for filing only*, and that to be entitled to examination, the applicant must file formal drawings complying with Rule 84 within 60 days, and pay the cost of comparing the photoprints with the formal drawings.

A comparison charge of $10.00 per hour, with a minimum charge of $10.00 per application is hereby established. This charge may be applied against deposit accounts and authorization to charge such accounts should be included when the formal drawings are filed. For those who have no deposit account acceptance of the formal drawings will be contingent upon payment of the comparison charge within the period set.

This notice supersedes the notice of April 24, 1964, published May 26, 1964, in 802 O.G. 871.

EDWARD J. BRENNER,
July 16, 1964. *Commissioner.*

[805 O.G. 3]

(84) NEW DRAWINGS PREPARED BY PATENT OFFICE

In Section 608.02(x) the paragraphs headed "New Drawings Prepared by Patent Office" are cancelled and the following substituted therefor:

> When new drawings have been required in pending applications and have been prepared by the Office draftsman, they are not sent to the applicant for his signature but a copy (print) is sent to him for his file. The name of the inventor(s) will be printed on the drawings by the Office draftsman.
>
> In the event that the application is in condition for allowance, the application will be sent to Issue immediately after the drawing is prepared.

RICHARD A. WAHL,
Jan. 6, 1966. *Assistant Commissioner.*

[823 O.G. 1]

(85) TRANSFER OF DRAWINGS

In view of the recent amendment of Rule 138 to permit the express abandonment of patent applications by the attorney, there is no longer any sufficient reason for delaying the formal abandonment of an application after all the drawings thereof have been transferred to another case. Accordingly, effective February 1, 1967, no request to transfer all the drawings from a pending application will be granted unless and until a formal abandonment of the application has been filed. In order to insure copendency, such an abandonment may be so worded as to become effective only after the transfer of the drawings has taken place.

EDWARD J. BRENNER,
Dec. 15, 1966. *Commissioner.*

[834 O.G. 431]

(86) GRAPHIC SYMBOLS FOR PATENT DRAWINGS

Rule 84(g) of the Rules of Practice in Patent Cases indicates that graphic drawing symbols and other labeled representations may be used for conventional elements where appropriate, subject to approval by the Office. Also, suitable legends may be used, or may be required, in proper cases.

The Rules of Practice pamphlet has, since the turn of the century, included a section entitled "Symbols for Draftsman" showing various symbols which may be used on patent application drawings. Although these symbols still reflect current practice they are somewhat limited in number and scope. A more complete set of symbols might be beneficial to both the Office and the public since it would foster uniformity of presentation, and more informative drawings. However, for the Office to develop and maintain a substantially complete listing of all graphic drawing symbols would be both difficult and time-consuming.

Therefore, since the American National Standards Institute Inc., 1430 Broadway, New York, N.Y., 10018, publishes a series of publications relating to graphic symbols under its Y32 and Z32 headings, the Office is calling the attention of patent applicants to these symbols for their consideration and use where appropriate in patent drawings. The below listed publications have been reviewed by the Office and the symbols therein are considered to be generally acceptable in patent

drawings. Although the Office will not "approve" all of the listed symbols as a group because their use and clarity must be decided on a case-by-case basis, these publications may be used as guides when selecting graphic symbols. Overly specific symbols should be avoided. Symbols with unclear meanings should be labeled for clarification. As noted in Rule 84(g), the Office will retain final authority to approve the use of any particular symbol in any particular case.

The reviewed publications are the following:

Y32.2–1970. Graphic Symbols for Electrical and Electronics Diagram	$11.50
Y32.10–1967. Graphic Symbols for Fluid Power Diagrams	3.00
Y32.11–1961. Graphic Symbols for Process Flow Diagrams in the Petroleum and Chemical Industries	2.00
Y32.14–1962. Graphic Symbols for Logic Diagrams	4.75
Z32.2.3–1949 (R1953). Graphic Symbols for Pipe Fittings, Valves and Piping	2.00
Z32.2.4–1949 (R1953). Graphic Symbols for Heating, Ventilating and Air Conditioning	2.00
Z32.2.6–1950. Graphic Symbols for Heat-Power Apparatus	2.00

No change in the Rules of Practice is considered necessary at this time.

The above list of publications will be included in the Manual of Patent Examining Procedure.

RICHARD A. WAHL,
May 19, 1972. *Assistant Commissioner.*

[899 O.G. 1230]

(87) LATE SUBMISSION OF FORMAL DRAWINGS

In those situations where an application is filed with informal drawings, applicants are requested to wait until they receive their "Notice of Informal Drawings" form, PO–1094, from the Group Art Unit before submitting the formal drawings and the comparison fee. The letter of transmittal accompanying the formal drawings should identify the Group Art Unit indicated on Form PO–1094. Also, each sheet of drawing should include the serial number and Group Art Unit in the upper right margin. In the past, some drawings have been misdirected because the Group Art Unit indicated on the filing receipt was used rather than that indicated on Form PO–1094.

WILLIAM FELDMAN,
June 28, 1973. *Acting Assistant Commissioner for Patents.*

[912 O.G. 1229]

EXAMINATION OF APPLICATIONS

(88) INFORMAL APPLICATIONS OF FOREIGN APPLICANTS

This Notice is of special interest to attorneys and agents prosecuting applications on inventions originating abroad.

Many applications filed in this Office correspond in form and substance to the requirements (regulations) of countries foreign to the United States. Since they were not originally drafted to comply with our Rules of Practice, especially those based on 35 U.S.C. 112, the first examination cannot be the full and complete one contemplated under current examining procedures. This first examination is necessarily limited, under MPEP 702.01, to pointing out the informalities and citing the results of a search, the search being based upon the invention so far as it can be understood from the foreign type of claims, often coupled with a somewhat generalized disclosure. Since U.S. Patent Office policy is to accord equal treatment to *all* cases regardless of origin, current examining procedures as explained in the address reprinted in 803 O.G. 893, subject these applications to final determination on the second action. It is obviously to applicant's advantage to *file* the application with an adequate disclosure and with claims which conform to the U.S. Patent Office usages and requirements. This should be done whenever possible. If, however, due to the pressure of a Convention deadline or other reasons, this is not possible, applicants are urged to submit *promptly, preferably within three months after filing,* a preliminary amendment which corrects the obvious informalities. The informalities should be corrected to the extent that the disclosure is readily understood and the claims to be initially examined are in proper form, particularly as to dependency, and otherwise clearly define the invention. "New matter" must be excluded from these amendments since preliminary amendments do not enjoy original disclosure status, section 608.04(b), MPEP.

EDWARD J. BRENNER,
Mar. 4, 1965. *Commissioner of Patents.*

[812 O.G. 1295]

(89) TERMINAL DISCLAIMERS FILED IN APPLICATIONS

In view of the increasing number of terminal disclaimers being filed in pending applications under 35 U.S.C. 253, it is considered advisable to point out the practice to be followed in such cases.

Since the claims of pending applications are subject to cancellation, amendment or renumbering, a terminal disclaimer directed to a particular claim or claims will not be accepted; the disclaimer must be of a terminal portion of the term of the entire patent to be granted. The statute does not provide for conditional disclaimers and accordingly, a proposed disclaimer which is made contingent on the allowance of certain claims cannot be accepted. The disclaimer should identify the disclaimant and his interest in the application and should specify the date when the disclaimer is to become effective. An acceptable form for such a disclaimer is as follows:

To the Commissioner of Patents:

Your petitioner, John Doe, residing at _____ in the county of _____ and State of _____ represents that he is (here state exact interest of the disclaimant and, if he is an assignee, set out the liber and page or reel and frame where the assignment is recorded) of application No. _____, filed on the _____ day of _____ 19 __ for _____. Your petitioner hereby disclaims all that portion of the term of any patent to be issued on the said application subsequent to _____ 19__.

The disclaimer must be accompanied by the statutory fee.

EDWARD J. BRENNER,
Apr. 26, 1965. *Commissioner.*

[814 O.G. 359]

(90) PRACTICE RE: TECHNICAL REJECTIONS

In the interest of reducing the number of technical rejections and expediting the prosecution of applications the following changes will be instituted effective June 1, 1965:

1. The inclusion of a negative limitation shall not, in itself, be considered a sufficient basis for objection to or rejection of a claim. However, if such a limitation renders the claim unduly broad or indefinite or otherwise results in a failure to point out the invention in the manner contemplated by 35 U.S.C. 112, an appropriate rejection should be made.

2. When materials recited in a claim are so related as to constitute a proper Markush group, they may be recited either in the conventional manner heretofore permitted, or alternatively. For example, if ". . . wherein R is a material selected from the group consisting of A, B, C and D" is a proper limitation then ". . . wherein R is A, B, C or D" shall also be considered proper.

3. The use of Markush claims of diminishing scope shall not, in itself, be considered a sufficient basis for objection to or rejection of claims. However, if such a practice renders the claims indefinite or if it results in undue multiplicity, an appropriate rejection shall be made. This change does not in any way affect the substantive law governing the treatment of Markush claims. The foregoing practice with respect to Markush claims of diminishing scope will be effective on an experimental basis until December 1, 1965, and, if it proves satisfactory, will then be adopted permanently.

EDWARD J. BRENNER,
Apr. 30, 1965. *Commissioner.*

[814 O.G. 715]

(91) "SPECIAL" EXAMINING PROCEDURE FOR CERTAIN NEW APPLICATIONS

The trial of "Special" Examining Procedure for Certain New Applications as announced in 812 O.G. 953 and later modified by 817 O.G. 423 indicates the desirability of making such procedure available on a standard operating basis. Accordingly, an additional category is being added to the list of situations in which an application may be advanced out of turn for examination, Rule 102 and M.P.E.P. 708.01 and 708.02. The M.P.E.P. will be rewritten to incorporate this practice.

Certain further modifications have been incorporated into the conditions and procedure; most importantly, the new case now may be a continuing or divisional application, the prohibition against an application having an earlier effective U.S. filing date has been removed. Original limits on filing date and on number in any Group have previously been deleted.

The full text of conditions and procedures now applicable appears below, and the notices in 812 O.G. 953 and 817 O.G. 423 are accordingly rendered obsolete.

REQUIREMENTS AND PROCEDURES TO EFFECT ACCELERATED EXAMINATION OF NEW APPLICATIONS

Requirements Precedent to Grant of Special Status for Accelerated Examination

A new application (one which has not received any examination by the examiner) may be granted special status provided that applicant (and this term includes applicant's attorney or agent) concurrently:

(a) Submits a written petition to make special.

(b) Agrees that the application will not include more than ten claims at any time. Should the pending application contain more than ten claims when the request for special status is filed, an amendment must be proposed at that time to reduce the number to not more than ten, which amendment will be entered only if the special status is granted. All of the claims presented for this special prosecution must obviously be directed to a single invention.

(c) Submits a statement that a pre-examination search was made, and specifying whether by the inventor, attorney, professional searchers, etc., and listing the field of search by class and subclass, publication, chemical abstracts, foreign patents, etc.

(d) Submits one copy each of the references deemed most closely related to the subject matter encompassed by the claims.

(e) Submits a detailed discussion of the references, which discussion points out, with the particularity required by Rule 111(b) and (c), how the claimed subject matter is distinguishable over the references. Where applicant indicates an intention of overcoming one of the references by affidavit under Rule 131, the affidavit must be submitted before the application is taken up for action, but in no event later than one month after request for special status.

In those instances where the request for this special status does not meet all the prerequisites set forth above, applicant will be notified and the defects in the request will be stated. The application will remain in the status of a new application awaiting action in its regular turn. In those instances where a request is defective in one or more respects, applicant will be given *one* opportunity to perfect the request. If perfected, the request will then be granted.

Once a request has been granted, prosecution will proceed according to the procedure set forth below; there is no provision for "withdrawal" from this special status.

Special Examining Procedure

1. The new application, having been granted special status as a result of compliance with the requirements set out in the section titled "Requirements Precedent to Grant of Special Status for Accelerated Examination," supra, will be taken up by the Examiner before all other categories of applications except those clearly in condition for allowance and these with set time limits, such as Examiner's Answers, Decisions on Motions, etc., and will be given a complete first action which will include *all* essential matters of merit as to all claims. The Examiner's search will be restricted to the *subject matter encompassed by the claims.* This first action will terminate with the setting of a three-month shortened period for response.

2. During the three-month period for response, applicant is encouraged to arrange for an interview with the Examiner in order to resolve, with finality, as many issues as possible. In order to afford the Examiner time for reflective consideration before the interview, applicant or his representative should cause to be placed in the hands of the Examiner at least one working day prior to the interview, a copy (clearly denoted as such) of the amendment that he proposes to file in response to the Examiner's action. Such a paper will not become a part of the file, but will form a basis for discussion at the interview.

3. Subsequent to the interview, or responsive to the Examiner's first action if no interview was had, applicant will file his "record" response. The response at this stage, to be proper, must be restricted to the rejections, objections, and requirements made. Any amendment which would require broadening the search field will be treated as not a proper response.

4. The examiner will within one month from the date of receipt of applicant's formal response, take up the application for final disposition. This disposition will constitute either a final action which terminates with the setting of a three-month period for response, or a notice of allowance. No further response will be made by the Examiner after a final action with the exceptions that (a) an Examiner's Answer may be prepared in response to an appeal brief, or (b) the application may be passed to issue.

5. A personal interview after final Office action will not be permitted unless requested by the Examiner. However, telephonic interviews will be permitted where appropriate for the purpose of correcting any minor matters which remain outstanding.

RICHARD A. WAHL,
Dec. 14, 1965. *Assistant Commissioner.*

[822 O.G. 2]

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(92) SPECIAL EXAMINING PROCEDURE FOR CERTAIN NEW APPLICATIONS

The practice of granting special status to certain new applications as set forth in the Notice of December 14, 1965, 822 O.G. 2, is modified to the extent indicated below in the case where the Office determines that all of the claims presented are not obviously directed to a single invention.

Where the claims in a case are directed to more than one invention, an election without traverse will be a prerequisite to the grant of special status.

The election may be made by applicant at the time of filing the petition for special status. Should applicant fail to include an election with the original papers or petition and the Office determines that a requirement should be made, the established telephone restriction practice will be followed.

If otherwise proper, examination on the merits will proceed on claims drawn to the elected invention.

If applicant refuses to make an election without traverse, the application will not be further examined at that time. The petition will be denied on the ground that the claims are not directed to a single invention, and the application will await action in its regular turn.

Divisional applications directed to the non-elected inventions will *not* automatically be given special status based on papers filed with the petition in the parent case. Each such application must meet on its own all requirements for the new special status.

RICHARD A. WAHL,
Mar. 21, 1967. *Assistant Commissioner.*

[837 O.G. 667]

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(93) SPECIAL EXAMINING PROCEDURE

The Special Examining Procedure whereby a new application may be granted special status and advanced for examination is hereby revised to remove the condition limiting the application to no more than ten claims. The petition for special status will be granted regardless of the number of

claims pending in the application at any time provided all other remaining conditions of this program are met (see MPEP 708.02).

RICHARD A. WAHL,
June 12, 1968. *Assistant Commissioner.*

[852 O.G. 509]

(94) PROSECUTION OF PATENT APPLICATIONS AFTER FINAL ACTION

Experience over the past several months indicates the need to re-emphasize certain areas of examining procedure outlined In Assistant Commissioner Wahl's address to the Patent Examining Corps on September 24, 1965 (819 O.G. 893). Certain paragraphs or parts thereof are quoted below, with emphasis added.

"It is planned, accordingly, that prosecution before the examiner should be essentially concluded after applicant's first response and the examiner's reply thereto. *No amendments to claims, nor new claims, should be entered after final rejection, except in rare instances, unless it is readily apparent that these place the case in condition for allowance or materially reduce or simplify the issues for appeal. Also, no amendments should be entered which raise new issues or require further search.* However, if a response to a final rejection is received and it would clearly place the case in condition for allowance except for minor matters which could be cleared up over the telephone, the examiner should telephone applicant or his attorney or agent to try to promptly clear up such matters."

* * * * *

"In general, a very complete and thoroughly considered first response by applicant will be in order because it will determine the form and content of the claims, not only for the final consideration by the examiner, but also by the Board of Appeals if appeal be taken. In this connection, attention is directed to suggestions set forth in notices in the OFFICIAL GAZETTE in recent years that applicant should include in his application at the time of filing, or after the first complete action, the most detailed claim that he would be willing to accept as well as the broadest claim to which he considers himself entitled."

* * * * *

"A third change in procedure is that in all cases wherein the examiner decides that a requirement for restriction to one invention or for election of species must be made, a telephone call will be made to applicant or his representative advising him of the situation and requesting a prompt election by return telephone call if the decision cannot be made immediately. When the election is made by telephone, the examiner in his action will make of record the complete requirement and will state the date of the call, the name of the applicant or his representative who made the election, and the result of the election. Such restriction or election requirements will, of course, be subject to written requests for reconsideration (traverse) in accordance with Rule 143. If no reply is received to the examiner's telephoned requirement within a reasonable period, about three working days, he will proceed to make the requirement in a written action as heretofore."

In further implementation of these procedures, the following paragraphs add further details to take effect on the date of this notice and to apply to all Office actions taken or written, and to all communications received from applicant, on or after the effective date.

FINAL ACTION AND PRE-APPEAL

The prosecution of an application before the examiner should ordinarily be concluded with the final action. However, one personal interview and one written response by applicant may be entertained after such final action if circumstances warrant. Thus, only one request by applicant for a personal interview after final should be granted, but in exceptional circumstances, a second personal interview may be initiated by the *examiner* if in his judgment this would *allowance.* Any amendment submitted under Rule 116(a) and Rule 116(b) *for purposes of appeal* should be presented in materially assist in placing the application in condition for the first response after final action and will be considered as heretofore; if any amendments are submitted after the examiner's reply to such first response, they should be refused entry as not warranted at this stage of prosecution, even though such amendments allegedly present rejected claims in better condition for appeal. Similarly, no affidavit should be considered if presented later than with the first response after final unless a showing is made under Rule 116(b).

The practice will be continued of advising applicant by means of the recently introduced form letter (POL–303) as to the disposition of proposed amendments to the claims and as to the effect of any argument or affidavit submitted in the *first* response after final action.

If a response subsequent to the first response after final action is received before appeal and which *on its face* clearly places the application in condition for allowance, it should be entered and a notice of allowability (POL–255) promptly sent to applicant; if such subsequent response does not *on its face* place the application in condition for allowance, it should not be considered further (unless, in the examiner's judgment, there are only minor matters which could be readily cleared up in a telephone interview leading to a notice of allowance) and should be refused entry. A form letter (POL–309) will be used for notification that such subsequent responses do not place the application in condition for allowance.

Requests for extension of the shortened statutory period for reply after final action, under Rule 130(b), will be considered by the Primary Examiner and if granted will be for not more than one month; petitions for further extensions will be decided by the Commissioner or his designees in this matter. It should be noted that, under Rule 181(f), the filing of a Rule 181 petition will not stay the period for reply to an Examiner's action which may be running against an application.

APPEAL AND POST-APPEAL

The record on appeal should be essentially the record before the examiner at the time appeal is taken. Thus, no amendments, except under Rule 193(b), presented after appeal has been taken should be entered *for purposes of appeal, and no exception should be made to this,* see Rule 116(c). Amendments, arguments, or affidavits filed concurrently with or of even date with appeal notice will be construed as filed after appeal for the purpose of this procedure, even though they may be the first response to the final action. In accordance with Rule 195, affidavits or exhibits submitted after the case has been appealed should be considered for entry *only if applicant makes the necessary showing* why they were not earlier presented; Rule 195 should be strictly construed in this regard. If after appeal has been taken, a paper is presented which *on its face* clearly places the application in condition for allowance, such paper should be entered and a notice of allowability (POL–255) promptly sent to applicant. If such paper does not *on its face* place the application in condition for allowance, it should not be considered further (unless in the examiner's judgment there are only minor matters which could be readily cleared up in a telephone interview leading to a notice of allowance) and proposed amendments therein should not be entered. Notification that such papers do not place the application in condition for allowance will be made by use of a form letter (POL–309).

In accordance with the above, the Brief should be directed to the claims and to the record of the case as they appeared upon filing the appeal, but it may, of course, withdraw from consideration on appeal any claims or issues as desired by appellant.

Upon timely filing of a Brief, it will be referred to the examiner for his consideration of its propriety as to the appeal issues and for preparation of an Examiner's Answer if the Brief is proper and the application is not allowable. The Examiner's Answer will normally be of the shortened type referring to and relying on the final action; it may withdraw rejection of claims or any objection or requirement as desired by the examiner. No new ground of rejection or objection should be incorporated in the Examiner's Answer *without express approval in each case by the Group Manager.*

RESTRICTION AND ELECTION

A basic policy of the streamlined examining program is that the second action on the merits should be made final. In those applications wherein a requirement for restriction or election is accompanied by the rejection of linking or

generic claims, such action will be considered to be an action on the merits and the next action by the examiner should be made final. It may thus be to applicant's advantage to make a telephone election in such cases prior to the first action.

Requirements for restriction or election will continue to be governed by existing criteria. However, in stating a requirement for restriction hereafter there should be no citation of patents to show separate status or classification or utility. The separate inventions should as heretofore be identified by a grouping of the claims with a short description of the total extent of the invention claimed in each group, specifying the type or relationship of each group as by stating the group is drawn to process, or to subcombination, or to product, etc., and should indicate the classification or separate status of each group, as for example, by class and subclass.

The period for response to a requirement for restriction or election, where there is no rejection of claims, will hereafter be set at 30 days.

MANUAL OF PATENT EXAMINING PROCEDURE

Procedures currently set forth in the Manual of Patent Examining Procedure which may be in conflict with the above are superseded by those announced above. Change Notices and replacement pages will be issued in due course.

MANUAL OF CLERICAL PROCEDURE

This information will also be incorporated in the Manual of Clerical Procedure.

RICHARD A. WAHL.

[824 O.G. 4 (Mar. 1, 1966)]

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(95) DOUBLE PATENTING

In view of the uncertain situation which has arisen as a result of recent decisions dealing with "double patenting" it is thought to be advisable to restate the practice which should be followed in this area, particularly as regards the effect of terminal disclaimers. The term "double patenting" is properly applicable only to cases involving two or more applications and/or patents of the same inventive entity and should not be applied to situations involving commonly owned cases of different inventive entities. Sole and joint inventors cannot constitute a single entity, nor do two or more sets of joint inventors constitute a single entity if any individual is included in either set who is not also included in the other.

If two or more cases are filed by a single inventive entity, and if the expiration dates of the patents, granted or to be granted, are the same, either because of a common issue date or by reason of the filing of one or more terminal disclaimers, two or more patents may properly be granted, if the claims do not overlap, even though the subject matter to which the claims of one case are directed may be obvious in view of the subject matter claimed in the other case. *In re Robeson*, 1964 C.D. 561, 141 USPQ 485; *In re Kaye*, 1964 C.D. 630, 141 USPQ 829. Claims overlap within the meaning of this statement if it is possible for them to be infringed by the same process, machine, manufacture, or composition of matter. Cross reading is not necessary to constitute such an overlap.

Overlapping claims should not be allowed in cases filed by the same inventive entity if they are directed to identical inventive concepts, or if the concept to which one set of claims is directed would be obvious in view of that to which the other set is directed. This is true regardless of the relative filing dates of the cases or the relative scope of the claims.

In situations involving cases filed by different inventive entities, regardless of ownership, Sections 102 and 103 of 35 U.S.C. preclude the granting of two or more patents when directed to identical inventive concepts or when one of the concepts would be obvious in view of the other. A terminal disclaimer can have no effect in this situation since the basis for refusing more than one patent is not connected with any extension of monopoly.

In view of 35 U.S.C. 135, it is necessary to determine priority of invention whenever two different inventive entities are claiming a single inventive concept, and this determination should ordinarily be made before any patent is issued. This is true regardless of ownership, and the provision of Rule 201(c) that interferences will not be declared or continued between commonly owned cases unless good cause is shown therefor does not mean that two patents are to be allowed in such cases, but that the common assignee should be called on to state which of the entities involved is prior to the other in date of invention.

Accordingly, the assignee of two or more cases of different inventive entities, containing conflicting claims, should be called on to maintain a line of demarcation between them. If such a line is not maintained then, when one of the cases is in condition for allowance, claims covering the conflicting subject matter should be suggested as provided in Rule 203, care being taken to insure that such claims cover all the conflicting matter and the assignee should be called on to state which entity is the prior inventor of that subject matter and to limit the claims of the other application accordingly. If the assignee does not comply with this requirement and presents the interfering claims in both cases, an interference should be declared, attention being directed to Rule 208 if there is a common attorney. If suggested claims are not presented within the time allowed, rejection should be made on the ground of disclaimer as indicated in Rule 203(b).

In the event that a common assignee, after taking out a patent on one of two or more applications, for the first time presents claims in a pending application which are not patentably distinct from claims of the patent, the claims of the application should be rejected on the ground that the assignee, by taking out the patent at a time when the application was not claiming the patented invention, is estopped to contend that the patentee is not the prior inventor.

If a patent is inadvertently issued on one of two commonly owned applications by different inventive entities which at the time when the patent issued were claiming inventions which are not patentably distinct, the assignee should be called on to make a determination of priority as in the case of pending applications and, if no election is made, an interference should be declared. An election of the applicant as the first inventor should not be accepted without a complete (not terminal) disclaimer of the conflicting claims in the patent.

EDWARD J. BRENNER,
Jan. 9, 1967. *Commissioner.*

[834 O.G. 1615]

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(96) MODIFICATION OF NOTICE OF JANUARY 31, 1967

The practice set forth in the notice of January 31, 1967, entitled "Double Patenting" (834 O.G. 1615), is modified to the extent that when a single inventive entity is involved a terminal disclaimer will be accepted to avoid a double patenting rejection even if the claims overlap, if the claims which would otherwise be subject to such rejection could not have been allowed in the other application or patent, and if the terminal disclaimer further provides that the patent shall expire immediately if it ceases to be commonly owned with the other application or patent.

EDWARD J. BRENNER,
Feb. 14, 1968. *Commissioner.*

[848 O.G. 1]

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(97) DOUBLE PATENTING AND TERMINAL DISCLAIMER

The practice concerning double patenting and the effect of a terminal disclaimer on such a rejection is set out below. The notices of January 9, 1967, and February 14, 1968, relating to this subject are hereby superseded except with reference to the practice described involving different inventive entities.

Claims should be rejected on double patenting only in cases involving two or more applications and/or patents of the same inventive entity and not in situations involving commonly owned cases of different inventive entities. Commonly owned cases of different inventive entities are to be treated in the manner set out in MPEP 804.03.

If two or more cases are filed by a single inventive entity, and if the expiration dates of the patents, granted or to be granted, are the same, either because of a common issue date or by reason of the filing of one or more terminal disclaimers, two or more patents may properly be granted provided the claims of the different cases are not drawn to the same in-

vention (*In re Knohl*, 155 USPQ 586; *In re Griswold*, 150 USPQ 804).

Claims that differ from each other (aside from minor differences in language, punctuation, etc.), whether or not the difference is obvious, are not considered to be drawn to the same invention. In cases where the difference is obvious, terminal disclaimers are effective to overcome rejections on double patenting. However, such terminal disclaimers should include a provision that the patent shall expire immediately if it ceases to be commonly owned with the other application or patent.

Where there is no such difference, the inventions are the same and a terminal disclaimer is ineffective.

EDWARD J. BRENNER,
Feb. 18, 1969. *Commissioner.*

[860 O.G. 661]

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(98) NON-FINAL SECOND ACTION REJECTION PRACTICE

Experience since September 1, 1966, indicates that the non-final second action rejection practice announced on a trial basis at 829 O.G. 1755 (M.P.E.P. Change Notice 10—1) has worked out satisfactorily for both the Office and the applicants. Effective immediately, that practice as restated below will be followed on a regular basis.

Second actions on the merits will not be made final where the examiner introduces a new ground of rejection not necessitated by amendment of the application by the applicant. Further, in carrying out this policy, a second action on the merits in any application will not be made final if it includes a rejection of any claim not amended by applicant where that rejection relies on newly cited art. Also, amendments complying with objections or requirements as to form are to be permitted after final action in accordance with Rule 116(a).

RICHARD A. WAHL,
Jan. 30, 1967. *Assistant Commissioner.*

[835 O.G. 715]

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(99) NEW FIRST ACTION PROCEDURE

Effective January 2, 1968, a new practice involving the use of a revised form for the first page of the first Office Action will be instituted. The use of this new form will introduce some new practices and procedures and will terminate the "Interview Practice Preliminary to Notice Under 35 U.S.C. 132" announced August 1, 1967, at 841 O.G. 1.

The heading of the revised form containing the address and application identification will have a completely revised format to facilitate future pre-action addressing by automatic typewriter.

Under the new procedure, the Examiner will signify on the revised form certain information including the period set for response, any attachments, and, in a "summary of action," the position taken on all claims.

The new procedure will also allow the Examiner, in the exercise of his professional judgment, to indicate that a discussion with applicant's representative may result in agreements whereby the application may be placed in condition for allowance and that the Examiner will telephone the representative within about two weeks. Under this practice the applicant's representative can be adequately prepared to conduct such a discussion. Any resulting amendment may be made either by the applicant's attorney or agent or by the Examiner in an Examiner's Amendment. It should be recognized that when extensive amendments are necessary it would be preferable if they were filed by the attorney or agent of record, thereby reducing the professional and clerical workload in the Patent Office and also providing the file wrapper with a better record, including applicant's arguments for allowability as required by Rule 111.

RICHARD A. WAHL,
Dec. 11, 1967. *Assistant Commissioner.*

[845 O.G. 1205]

(100) CONTINUATIONS—RES JUDICATA REJECTIONS

Some confusion exists in the interpretation of the established Office policy regarding the use of *res judicata* rejections. To clarify the Manual on this point the following changes are made—

The second paragraph of MPEP 201.07 is rewritten to read:

At any time before the patenting or abandonment of or termination of proceedings on his earlier application, an applicant may have recourse to filing a continuation in order to introduce into the case a new set of claims and to establish a right to further examination by the primary Examiner.

The last two sentences of MPEP 201.11 are deleted. MPEP 706.03(w) is rewritten to read:

A prior adjudication against the inventor on the same or similar claims constitutes a proper ground of rejection as *res judicata*. See *Ex parte Budde*, 150 USPQ 469; 828 O.G. 409. The rejection should be used only when the earlier decision was a decision of the Board of Appeals or any of the reviewing courts, and when the time for further court review has expired and no such review has been sought, or, if filed, the review action is terminated. The timely filing of a second application copending with an earlier application does not preclude the use of *res judicata* as a ground of rejection for the second application claims.

When making a rejection on *res judicata*, action should ordinarily be made also on the basis of prior art.

RICHARD A. WAHL,
Mar. 18, 1968. *Assistant Commissioner.*

[849 O.G. 277]

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(101) GUIDELINES FOR CONSIDERING DISCLOSURES OF UTILITY IN DRUG CASES

On December 5, 1967 the text of certain guidelines which the Patent Office proposed to adopt in the examination of applications for drugs, was published in the OFFICIAL GAZETTE (845 O.G. 1). A hearing was had on January 16, 1968, and all persons, who desired to, were invited to attend and to submit their views, objections, recommendations or suggestions. The following guidelines are being published after consideration of all the material and opinions, both written and oral, which were submitted in response to that invitation.

EDWARD J. BRENNER,
Mar. 19, 1968. *Commissioner of Patents.*

General

These guidelines are set down to provide uniform handling of applications disclosing drug or pharmaceutical utility. They are intended to guide patent examiners and patent applicants as to criteria for utility statements. They deal with fundamental questions and are subject to revision and amendment if future case law indicates this to be necessary.

The following two basic principles shall be followed in considering matters relating to the adequacy of disclosure of utility in drug cases:

(1) The same basic principles of patent law which apply in the field of chemical arts shall be applicable to drugs, and

(2) The Patent Office shall confine its examination of disclosure of utility to the application of patent law principles, recognizing that other agencies of the government have been assigned the responsibility of assuring conformance to the standards established by statute for the advertisement, use, sale or distribution of drugs.[1]

A drug is defined by 21 U.S.C. 321(g)

The term "drug" means (A) articles recognized in the articles intended for use in the diagnosis, cure, mitiga- Pharmacopeia of the United States, or official National Formulary, or any supplement to any of them; and (B) articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals; and (C) articles (other than food) intended to

[1] *In re Krimmel*, 48 CCPA 1116, 292 F.2d 948, 130 USPQ 215; *In re Hartop et al.*, 50 CCPA 780, 311 F.2d 249, 135 USPQ 419.

affect the structure or any function of the body of man or other animals; and (D) articles intended for use as a component of any articles specified in clause (A), (B), or (C); but does not include devices or their components, parts or accessories.

In addition, compositions adapted to be applied to or used by human beings, e.g., cosmetics, dentifrices, mouthwashes, etc., may be treated in the same manner as drugs subject to the conditions stated.

Any proof of a stated utility or safety required pursuant to these guidelines may be incorporated in the application as filed, or may be subsequently submitted by affidavit if and when required. The Patent Office, in reaching its own independent decisions on questions of utility and how to use under 35 U.S.C. 101 and 112, will continue to avail itself of assistance and information from the Secretary of Health, Education, and Welfare as authorized by 21 U.S.C. 372(b), when necessary.

In accordance with the basic principles set forth above, the following procedures shall be followed in examining patent applications in the drug field with regard to disclosures relating to utility.

35 U.S.C. 101

Utility must be definite and in currently available form,[2] not merely for further investigation or research but commercial availability is not necessary. Mere assertions such as "therapeutic agents,"[3] "for pharmaceutical purposes,"[4] "biological activity,"[5] "intermediates,"[6] and for making further unspecified preparations are regarded as insufficient.

If the asserted utility of a compound is believable on its face to persons skilled in the art in view of the contemporary knowledge in the art, then the burden is upon the examiner to give adequate support for rejections for lack of utility under this section.[7] On the other hand, incredible statements[8] or statements deemed unlikely to be correct by one skilled in the art[9] in view of the contemporary knowledge in the art will require adequate proof on the part of applicants for patents.

Proof of utility under this section may be established by clinical or *in vivo* or *in vitro* data, or combinations of these, which would be convincing to those skilled in the art.[10] More particularly, if the utility relied on is directed *solely* to the treatments of humans, evidence of utility, if required, must generally be clinical evidence.[11] Although animal tests may be adequate where the art would accept these as appropriately correlated with human utility.[12] If there is no assertion of human utility,[13] or if there is an assertion of animal utility,[14] operativeness for use on standard test animals is adequate for patent purposes.

Exceptions exist with respect to the general rule relating to the treatment of humans. For example, compositions whose properties are generally predictable from a knowledge of their components, such as laxatives, antacids and certain topical preparations, require little or no clinic proof.[15]

Although absolute safety is not necessary to meet the utility requirement under this section, a drug which is not sufficiently safe under the conditions of use for which it is said to be effective will not satisfy the utility requirement.[16] Proof of safety shall be required only in those cases where adequate reasons can be advanced by the examiner for believing that the drug is unsafe, and shall be accepted if it establishes a reasonable probability of safety.

35 U.S.C. 112

A mere statement of utility for pharmacological or chemotherapeutic purposes may raise a question of compliance with Section 112, particularly ". . . as to enable any person skilled in the art to which it pertains . . . to use the same." If the statement of utility contains within it a connotation of how to use, and/or the art recognizes that standard modes of administration are contemplated, Section 112 is satisfied.[17] If the use disclosed is of such nature that the art is unaware of successful treatments with chemically analogous compounds, a more complete statement of how to use must be supplied than if such analogy were not present.[18] It is not necessary to specify the dosage or method of use if it is obvious to one skilled in the art that such information could be obtained without undue experimentation.

With respect to the adequacy of disclosure that a claimed genus possesses an asserted utility representative examples together with a statement applicable to the genus as a whole will ordinarily be sufficient if it would be deemed likely by one skilled in the art, in view of contemporary knowledge in the art, that the claimed genus would possess the asserted utility.[19] Proof of utility will be required for other members of the claimed genus only in those cases where adequate reasons can be advanced by the examiner for believing that the genus as a whole does not possess the asserted utility. Conversely, a sufficient number of representative examples, if disclosed in the prior art will constitute a disclosure of the genus to which they belong.

In the case of mixtures including a drug as an ingredient, or mixtures which are drugs, or methods of treating a specific condition with a drug, whether old or new, a specific example should ordinarily be set forth, which should include the organism treated. In appropriate cases, such an example may be inferred from the disclosure taken as a whole and/or the knowledge in the art (e.g., gargle).

Where the claimed compounds are capable of several different utilities and one use is adequately described in accordance with these guidelines, additional utilities will be investigated for compliance with Sections 101 and 112 only if not believable on their face to those of ordinary skill in the art in view of the contemporary knowledge of the art. Failure to meet these standards may result in a requirement to cancel such additional utilities.[20]

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[2] *Brenner* v. *Manson*, 383 U.S. 519, 148 USPQ 689.

[3] Cf. *In re Lorenz et al.* 49 CCPA 1227, 305 F.2d 875, 134 USPQ 312, cf. *Ex parte Brockmann et al.*, 127 USPQ 57.

[4] *In re Diedrich*, 50 CCPA 1355, 318 F.2d 946, 138 USPQ 128.

[5] *In re Kirk et al.*, 54 CCPA 1119, 153 USPQ 48; *Ex parte Lanham*, 135 USPQ 106.

[6] *In re Joly et al.*, 54 CCPA 1159, 153 USPQ 45; *In re Kirk et al.*, 54 CCPA 1119, 153 USPQ 48.

[7] *In re Gazave*, 54 CCPA 1524, 154 USPQ 92.

[8] *In re Citron*, 51 CCPA 852, 325 F.2d 248, 139 USPQ 516; *In re Oberweger*, 28 CCPA 749, 115 F.2d 826, 47 USPQ 455; *Ex parte Moore et al.*, 128 USPQ 8.

[9] *In re Ruskin*, 53 CCPA 872, 354 F.2d 395, 148 USPQ 221; *In re Pottier*, 54 CCPA 1293, 153 USPQ 407; *In re Novak et al.* 49 CCPA 1283, 306 F.2d 924, 134 USPQ 335. See also, *In re Irons*, 52 CCPA 938, 340 F.2d 974, 144 USPQ 351.

[10] *In re Irons*, 52 CCPA 938, 340 F.2d 924, 144 USPQ 351; *Ex parte Paschall*, 88 USPQ 131; *Ex parte Pennell et al.*, 99 USPQ 56; *Ex parte Ferguson*, 117 USPQ 229; *Ex parte Timmis*, 123 USPQ 581.

[11] *Ex parte Timmis*, 123 USPQ 581.

[12] *In re Hartop et al.*, 50 CCPA 780, 311 F.2d 249, 135 USPQ 419; *Ex parte Murphy*, 134 USPQ 134.

[13] Cf. *Blicke* v. *Treves*, 44 CCPA 753, 241 F.2d 718, 112 USPQ 472; *In re Krimmel*, 48 CCPA 1116, 292 F.2d 948, 130 USPQ 215; *In re Dodson*, 48 CCPA 1125, 292 F.2d 943, 130 USPQ 224; *In re Hitchings*, 52 CCPA 1141, 342 F. 2d 80, 144 USPQ 637.

[14] *In re Bergel et al.*, 48 CCPA 1102, 292 F.2d 955, 130 USPQ 206; *Ex parte Melvin*, 155 USPQ 47.

[15] *Ex parte Harrison et al.*, 129 USPQ 172; *Ex parte Lewin*, 140 USPQ 70.

[16] *In re Hartop et al.* 50 CCPA 780, 311 F.2d 249, 135 USPQ 419.

[17] Cf. *In re Johnson*, 48 CCPA 733, 282 F.2d 370, 127 USPQ 216; *In re Hitchings et al.*, 52 CCPA 1141, 342 F.2d 80, 144 USPQ 637.

[18] *In re Mourcu et al.*, 52 CCPA 1363, 345 F. 2d 595, 145 USPQ 452; *In re Schmidt et al.*, 54 CCPA 1577, 153 USPQ 640.

[19] *In re Oppenauer*, 31 CCPA 1248, 143 F.2d 974, 62 USPQ 297; *In re Cavallito et al.*, 48 CCPA 711, 282 F.2d 357, 127 USPQ 202; *In re Cavallito et al.*, 48 CCPA 720, 282 F.2d 363, 127 USPQ 206; *In re Schmidt*, 48 CCPA 1140, 293 F.2d 274, 130 USPQ 404; *In re Cavallito*, 49 CCPA 1335, 306 F.2d 505, 134 USPQ 370; *In re Surrey*, 54 CCPA 855, 370 F.2d 349, 151 USPQ 724; *In re Lund et al.*, 54 CCPA 1361, 153 USPQ 625.

[20] *Ex parte Lanham*, 121 USPQ 223; *Ex parte Moore et al.*, 128 USPQ 8; *In re Citron*, 51 CCPA 852, 325 F.2d 248, 139 USPQ 516; *In re Gottlieb et al.*, 51 CCPA 1114, 328 F.2d 1016, 140 USPQ 665.

[849 O.G. 567]

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(102) APPLICATIONS TO BE TAKEN UP SPECIAL

Hereafter the existence of the following facts will place the application concerned in the category of special cases, i.e., those to be advanced out of regular order for examination.

Once a case is taken up for action by an Examiner according to its effective filing date, it should be treated as special by any Examiner, Art Unit or Group to which it may subsequently be transferred. Exemplary situations include: (1) new cases transferred as the result of a telephone election, and (2) cases transferred as the result of a timely response to any official action.

RICHARD A. WAHL,
Feb. 29, 1968. *Assistant Commissioner.*

[850 O.G. 4]

(103) REJECTIONS NOT BASED ON PRIOR ART

The primary object of the examination of an application is to determine whether or not the claims define a patentable advance over the prior art. This consideration should not be relegated to a secondary position while undue emphasis is given to non-prior art or "technical" rejections. Effort in examining should be concentrated on truly essential matters, minimizing or eliminating effort on matters which may have played a part in the examination process in the past but which are not really critical. Where a major technical rejection is proper (e.g., lack of proper disclosure, undue breadth, utility, etc.) such rejection should be stated with a full development of the reasons rather than by a mere conclusion coupled with some stereotyped expression.

Generally speaking, the inclusion of (1) negative limitations and (2) alternative expressions, provided that the alternatively expressed elements are basically equivalents for the purpose of the invention, are permitted if no uncertainty or ambiguity with respect to the question of scope or breadth of the claim is presented.

The examiner has the responsibility to make sure the wording of the claims is sufficiently definite to *reasonably* determine the scope. It is applicant's responsibility to select proper wording of the claim, except to the extent that the selection of words makes the claims indefinite. Under no circumstances should a claim be rejected merely because the Examiner prefers a different choice of wording.

Rejections not based on prior art are explained in 706.03(a) to 706.03(y). IF THE ITALICIZED LANGUAGE IN THESE SECTIONS IS INCORPORATED IN THE REJECTION, THERE WILL BE LESS CHANCE OF A MISUNDERSTANDING AS TO THE GROUNDS OF REJECTION.

RICHARD A. WAHL,
July 23, 1968. *Assistant Commissioner.*

[853 O.G. 603]

(104) REVISED DESIGN PATENT PRACTICE

The following changes are being instituted in order to clarify the distinction between the ornamental design for an article being claimed in a design patent and its environment. These changes are to be followed in the examination of all design applications as of the date of this notice. It is suggested that applicants initiate compliance with these changes in all pending design applications.

The ornamental design which is being claimed must be shown in solid lines in the drawing. Dotted lines for the purpose of indicating unimportant or immaterial features of the designed article are no longer permitted. There are no portions of a design which are immaterial or unimportant. In re *Blum*, 852 O.G. 1045; 153 USPQ 177.

The title of the article being claimed in a design patent must correspond to the name of the article shown in solid lines in the drawing.

RICHARD A. WAHL,
Feb. 26, 1969. *Assistant Commissioner.*

[860 O.G. 999]

(105) "MERE FUNCTION OF MACHINE"—REJECTION

In view of the decision of the Court of Customs and Patent Appeals in *In re Tarczy-Hornoch* appearing at 158 USPQ 141, process or method claims will no longer be subject to a rejection by Patent Office examiners solely on the ground that they define the inherent function of a disclosed machine or apparatus. Accordingly, the subject matter of MPEP 706.03(r) is inapplicable and hereby cancelled.

RICHARD A. WAHL,
Feb. 10, 1969. *Assistant Commissioner.*

[861 O.G. 343]

(106) FINAL REJECTION—FIRST ACTION

The claims of a new application may be finally rejected in the first Office action in those situations where (1) the new application is a continuing application of, or a substitute for, an earlier application, and (2) all claims of the new application (a) are drawn to the same invention claimed in the earlier application, and (b) would have been properly finally rejected on the art of record in the next Office action if they had been entered in the earlier application. A first action final rejection in a continuation-in-part application is not proper where any claim includes subject matter not present in the parent case.

RICHARD A. WAHL,
Mar. 20, 1969. *Assistant Commissioner.*

[861 O.G. 1011]

(107) CLAIM INTERPRETATION

The notice of January 15, 1968, appearing in the OFFICIAL GAZETTE of February 13, 1968 (847 O.G. 331) and concerned with statements relating to the scope of the invention claimed in patent applications, is hereby rescinded.

RICHARD A. WAHL,
Sept. 12, 1969. *Assistant Commissioner.*

[867 O.G. 1]

(108) EXAMINATION OF PATENT APPLICATIONS ON COMPUTER PROGRAMS

Notice of Rescission of Guidelines

Notice regarding the adoption by the Patent Office of guidelines for the examination of patent applications on computer programs was published in the Federal Register of October 22, 1968 (33 F.R. 15600), and in the OFFICIAL GAZETTE of the Patent Office of October 22, 1968 (855 O.G. 829).

In view of the decision by the U.S. Court of Customs and Patent Appeals in "In re Prater et al.," 162 USPQ 541, 866 O.G. 1034 (1969), the adopted guidelines are hereby rescinded, effective immediately. For the time being, adoption of new guidelines for the examination of patent applications is being deferred pending further judicial interpretation of the law on a case-by-case basis.

Consideration of "In re Prater et al.," has brought into question the advisability of issuing guidelines for the examination of patent applications on computer programs. Parties who desire to present their views, recommendations, or suggestions concerning such guidelines are invited to do so, by letter addressed to the Commissioner of Patents, Washington, D.C. 20231. Those parties who recommend the issuance of such guidelines are invited to submit comments concerning the proposed language of the guidelines.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: October 3, 1969.
MYRON TRIBUS,
Assistant Secretary for Science and Technology.

[F.R. Doc. 6912194; Filed, Oct. 9, 1969, 8:45 a.m.]

Published 34 F.R. 15724, October 10, 1969

[868 O.G. 349]

(109) CERTAIN CASES

Reopening After Decision, Board of Appeals

Effective with the date of this notice the Commissioner of Patents will, on a trial basis, entertain petitions under § 1.198 of Title 37, Code of Federal Regulations (Patent Office Rule 198), to reopen certain cases in which an applicant has sought review under 35 U.S.C. 141 or 145. This procedure is restricted to cases which have been decided by the Board of Appeals and which are amenable to settlement without the need for going forward with the court proceeding. Such petitions will ordinarily be granted only in the following categories of cases:

1. When the decision of the Board of Appeals asserts that the rejection of the claims is proper because the claims do not include a disclosed limitation or because they suffer from some other curable defect, and the decision reasonably is suggestive that claims including the limitation or devoid of the defect will be allowable;

2. When the decision of the Board of Appeals asserts that the rejection of the claims is proper because the record does

not include evidence of a specified character, and is reasonably suggestive that if such evidence were presented, the appealed claims would be allowable, and it is demonstrated that such evidence presently exists and can be offered; or

3. When the decision of the Board of Appeals is based on a practice, rule, law, or judicial precedent which, since the Board's decision, has been rescinded, repealed, or overruled.

Any such petition must be accompanied by the proposed amendment, evidence, or argument said to justify allowance of the claims. The petition further must point out how the case falls within one of the preceding categories. Failure to do so or failure of the case to qualify as coming within one of the categories will usually constitute bases for denying the petition. In any event, no case will be reopened unless it is for the consideration of matters not already adjudicated, and sufficient cause has been shown.

Such petitions will not be ordinarily entertained after the filing of the Commissioner's brief in cases in which review has been sought under 35 U.S.C. 141, or after trial in a 35 U.S.C. 145 case.

In the case of an appeal under 35 U.S.C. 141, if the petition is granted, steps will be taken to request the court to remand the case to the Patent Office and if so remanded the proposed amendments, evidence, and arguments will be entered of record in the application file for consideration, and further action will be taken by the Board of Appeals in the first instance or by the Examiner as may be appropriate. In the case of civil action under 35 U.S.C. 145, steps will be taken for obtaining dismissal of the action without prejudice to consideration of the proposals.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: Oct. 16, 1969.
MYRON TRIBUS,
Assistant Secretary for Science and Technology.

[F.R. Doc. 69-12674; Filed Oct. 22, 1969; 8:48 a.m.]

Published in 34 F.R. 17210, Oct. 23, 1969

[868 O.G. 1058]

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(110) PROSECUTION AND DELIVERY OF AMENDMENTS

General

Many of the difficulties encountered in the prosecution of patent applications after final rejection may be alleviated if each applicant includes, at the time of filing or no later than the first response, claims varying from the broadest to which he believes he is entitled to the most detailed that he is willing to accept.

Prosecution After Final Rejection

To expedite the resolution of cases under final rejection, an amendment filed at any time after final rejection but before an appeal brief is filed, may be entered upon or after filing of an appeal provided the total effect of the amendment is to (1) remove issues for appeal, and/or (2) adopt Examiner suggestions. Of course, if the amendment necessitates a new search, raises the issue of new matter, presents additional claims without cancelling a corresponding number of finally rejected claims, or otherwise introduces new issues, it will not be entered. Examiners will continue to respond to all non-entered amendments after final rejection, and will indicate the status of each claim of record or proposed, including the designation of claims that would be entered on the filing of an appeal if filed in a separate paper. It should be noted that an amendment placing a case in condition for allowance will be enterable by the Examiner at any stage prior to forwarding the answer on appeal. Except where an amendment merely cancels claims and/or adopts Examiner suggestions, removes issues for appeal, or in some other way requires only a cursory review by the Examiner, compliance with the requirement of a showing under Rule 116(b) will be expected of all amendments after final rejection.

In accordance with prior practice, in order to prevent abandonment, a timely filed amendment after final rejection that reaches the Examiner near the end or after the expiration of the period for response, may be entered in part if this can be done to make the case allowable (e.g., a second amendment after final rejection filed on the last day of the response period, where no appeal has been filed and the amendment cancels all rejected claims and proposes to add claims, at least one of which is unpatentable, entry would be approved to the extent of cancelling the rejected claims and entering only the patentable claims).

Only one attorney-initiated personal interview will be permitted after final rejection. However, the Examiner may initiate an interview anytime he believes it would expedite the prosecution of the application.

Hand Delivery of Papers (See Item 8)

For purposes of convenience in those cases where the attorney and the Examiner agree that a proposed amendment discussed during a *personal* interview would place the application in condition for allowance, the amendment may be left with the Examiner to become an official paper in the file without routing through the mail room, provided no additional fees are required. Where the case is under final rejection, if changes in the proposed amendment are necessary and these changes are not practical to be made by Examiner's Amendment, the attorney or a local associate will be permitted to hand deliver a corrected amendment to the Examiner, provided no additional fees are required and further that the amendment is submitted to the Examiner by the end of the next working day following the interview and within the period for response.

The Examiner who accepts these amendments will write "entry approved" in the left-hand margin of the first page of the amendment, date and initial the amendment, and then have it date stamped with the Group Stamp. For applications under final rejection acceptance of a hand delivered amendment will require the initials of a Primary Examiner.

The privilege of personal delivery of papers by attorneys to the Examining Groups is extended to requests for extensions of time in addition to amendments of the type referred to above.

RICHARD A. WAHL,
Nov. 10, 1969. *Assistant Commissioner.*

[869 O.G. 345]

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(111) PETITION TO REVIVE PRACTICE

Effective immediately, a decision on a petition to revive an abandoned application will be based solely on whether a satisfactory showing has been made that the delay was unavoidable (35 U.S.C. 133). A petition to revive will not be considered unless the petition fee and a proposed response to the last Office action have been received (Rule 137).

The granting of a petition to revive does not serve in any way as a determination that the proposed response to the Office action is completely responsive. Revived applications will be forwarded to the examiner to determine the completeness of the proposed response. Such applications must be taken up *Special*. If the examiner determines that the response is complete, he should promptly take the case up for action. If the proposed response is not a complete response to the last Office action, the examiner should write a letter to the applicant informing him of the specific defects in his response and set a one-month time limit for applicant to complete his response. If the applicant does not complete his response within the set one-month limit, the application is again abandoned.

RICHARD A. WAHL,
Dec. 11, 1969. *Assistant Commissioner.*

[869 O.G. 1362]

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(112) PETITION TO REVIVE PRACTICE—CLARIFICATION

In clarification of the notice of Dec. 11, 1969 (869 O.G. 1362), the practice set forth in the second paragraph thereof is limited to proposed "responses" *before* final rejection. While a response to a non-final action may be either an argument or an amendment under Rule 111, a response to a final action "must include cancellation of, or appeal from the rejection of, each claim so rejected" under Rule 113.

Accordingly, in any case where a final rejection had been made, the proposed response required for consideration of a petition to revive must be either an appeal or an amendment that cancels all the rejected claims or otherwise prima facie places the application in condition for allowance.

In those situations where abandonment occurred because of the failure to file an appeal brief, the proposed response,

required for consideration of a petition to revive, must include a brief accompanied by the proper fee.

RICHARD A. WAHL,
Feb. 20, 1970. *Assistant Commissioner.*

[873 O.G. 1]

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(113) MAIL DELAYS AND PETITIONS TO REVIVE

Since applications that become abandoned unintentionally present burdens to both the Patent Office and the applicant or his representatives, a simplified procedure has been devised to alleviate these burdens when the abandonment results from a delay in the mails. This procedure provides for an automatic petition to revive or petition to accept the delayed payment of issue fee.

It is suggested that when a communication, complying with the circumstances enumerated below, is mailed to the Patent Office more than three calendar days prior to the due date, a conditional petition be attached to the communication. If the communication is received in the Patent Office after the due date and the application becomes abandoned, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee (35 U.S.C. 41(a) 7), and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his registered representative stating that the communication and petition were either placed in the United States mail as first class or air mail, or placed in the mail outside the United States as air mail. Since mail handled in this manner may reasonably be expected to reach the Patent Office within three days of posting, any mail delays beyond such time will be considered to constitute unavoidable delay and sufficient cause to grant a petition to revive (35 U.S.C. 133) or a petition to accept delayed payment of an issue fee (35 U.S.C. 151).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action in the form of an amendment that cancels all rejected claims or otherwise prima facie places the application in condition for allowance.
3. A notice of appeal and requisite fee.
4. An appeal brief, in triplicate, and requisite fee.
5. A base issue fee.
6. A balance of issue fee.

Examples of which this procedure would not be appropriate and will not apply include:

1. Application papers.
2. A response to a final Office action other than that indicated in categories 2 and 3, above.
3. Extensions of time.
4. Petitions for delayed payment of either the issue fee or balance of issue fee.
5. Amendments under Rule 312.
6. Priority documents.

Normal petition practices are not affected in those situations where this procedure is either not elected or appropriate.

A suggested format for the conditional petition is shown below:

Applicant(s) ---------- ☐ Petition to revive
Serial No. ----------
Date Filed ---------- ☐ Petition to accept delayed payment of issue fee
For ----------

I hereby certify that the attached communication is being deposited in

☐ the United States mail as first class or air mail
☐ the mail outside the United States as air mail

in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on ----------, which date is more than three (3) calendar days prior to the due date from ---------- (Location), by ---------- (Name of Individual)

In the event that such communication is not timely filed in the United States Patent Office, it is requested that this paper be treated as a petition and that the:

☐ delay in prosecution be held unavoidable—35 U.S.C.133.
☐ delayed payment of the fee be accepted—35 U.S.C. 151.

The petition fee required by 35 U.S.C. 41(a) 7 is authorized to be charged to Deposit Account No. ---------- in the name of ----------.

The undersigned declare further that all statements made herein are true, based upon the best available information; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date ---------- ----------
(Signature of applicant or signature and registration number of Registered Representative)

And

Date ---------- ----------
(Signature of person mailing, if other than the above)

April 13, 1973. WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

[910 O.G. 402]

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(114) ENVIRONMENTAL QUALITY

In signing the National Environmental Policy Act on the first day of this decade, President Nixon declared, "The 1970's absolutely must be the years when America pays its debt to the past by reclaiming the purity of its air, its waters and our living environment." This landmark legislation declares that it is the continuing policy of the Federal Government to use all practicable means and measures to foster and promote the general welfare, create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans. The Act further directs that, to the fullest extent possible, the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act.

In accordance with the desires of the President and this mandate of the Congress, the Patent Office will accord "special" status to all patent applications for inventions which materially enhance the quality of the environment of mankind by contributing to the restoration or maintenance of the basic life-sustaining natural elements—air, water, and soil. In order that the Patent Office may implement this procedure, we request that all applicants desiring to participate in this program request that their applications be accorded "special" status. Such requests should be written, should identify the applications by serial number and filing date, and should be accompanied by affidavits or declarations under Rule 102 explaining how their inventions contribute to the restoration or maintenance of one of these life-sustaining elements.

WILLIAM E. SCHUYLER, JR.,
Jan. 29, 1970. *Commissioner of Patents.*

[871 O.G. 673]

(115) TIMELY PRESENTATION OF AFFIDAVITS OR DECLARATIONS UNDER RULES 131 AND 132

All affidavits or declarations under Rule 131 or 132 must be timely presented in order to be admitted.

Affidavits and declarations submitted prior to a final rejection will be considered timely.

An affidavit or declaration presented with a first response after final rejection for the purpose of overcoming a new ground of rejection or requirement made in the final rejection will be entered and considered without a showing under Rule 116(b).

No other affidavit or declaration, under Rule 131 or 132, presented after a final rejection, will be considered unless a satisfactory showing is made under Rule 116(b) or 195.

All admitted affidavits or declarations will be acknowledged and commented upon by the Examiner in his next succeeding action.

RICHARD A. WAHL,
July 9, 1970. *Assistant Commissioner of Patents.*

[877 O.G. 243]

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(116) ABBREVIATED FIRST ACTIONS ON THE MERITS

Starting on or about February 1, 1971, and continuing for a trial period of up to twelve months, a newly developed form (PO–1142) will be used for first actions on the merits of patent applications involving claims subject to rejection and/or objection on statutory or other legal grounds.

The form is designed to furnish a clear, full, and complete first action including the reasons for rejection and/or objection together with such information and references as may be useful in judging the propriety of continuing the prosecution, all in accordance with the statute (35 U.S.C. 132); and it is intended to abridge the action with condensed language using essential words and phrases in abbreviated form, in order to expedite the prosecution and reduce the pendency time of applications awaiting examination. Where found necessary in exceptional cases, a regular action without the form will be used.

For abbreviation purposes, references referred to on the form will be designated by capital letters and identified on revised reference list PO–892, and their correlation as applied to the claims will be indicated by symbols illustrated and explained on the bottom of the form. Sections 100–103, and 112 of the patent statute are reproduced on the back of the form.

Summary sheet POL–326 will continue in use with all first actions, and has been revised to identify different parts of the sheet as "Part I" and "Part II." Form PO–1142 will be distinguished as "Part III," and if a second copy of the form is necessary and is used to complete the action it will be marked for distinction as "Part III*a*" (a regular typed page if annexed to an action with the form will be designated as "Part IV"). All parts of the action after Part I (Parts II, III, and IV) will each have numbered paragraphs starting with the numeral 1, and communications relating thereto may be properly identified by the number on the particular part (for example, paragraph 2 on Part III may be identified as paragraph III–2).

As noted, Form PO–1142 will be used only for first actions on the merits concerned with claims subject to rejection and/or objection on statutory or other legal grounds. It will not be used for any subsequent action nor a first action made final as in a continuing application.

Second actions on the merits will be final according to prevailing practice, and any reference referred to in these or subsequent actions will be identified by name or otherwise in conventional manner, not by capital letters as used on Form PO–1142. For this reason, use of conventional reference identification in response to all Office actions will be helpful.

Only one carbon copy of the action will be furnished in accordance with the Notice of October 21, 1970, entitled "Office Actions" and appearing in 880 O.G. 740.

All other Office policies, practices, and procedures remain in effect.

RICHARD A. WAHL,
Jan. 5, 1971. *Assistant Commissioner.*

[883 O.G. 2]

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(117) ABBREVIATED FIRST ACTION PROGRAM

The Abbreviated First Action Program using Form PO–1142 announced in the OFFICIAL GAZETTE of February 2, 1971 (883 O.G. 2) has been reviewed in the light of comments received from examiners, attorneys, and other members of the public, pursuant to the notice of November 10, 1971 (893 O.G. 1). As a result of this review the program will be continued and the form modified to incorporate some of the suggested improvements. The space for the explanation of the rejection will be expanded. In addition, the instructions to the examiners will be supplemented to reinforce the original stress on the importance of legibility, clarity and completeness in setting forth the examiner's position, and desirability of including suggestions that would render the case allowable.

RICHARD A. WAHL,
Mar. 17, 1972. *Assistant Commissioner.*

[897 O.G. 762]

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(118) AFTER FINAL REJECTION PRACTICE

[37 CFR Part 1]

Notice of Proposed Rule Making

Notice is hereby given that pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.116, 1.191, 1.192, and 1.193, and by adding § 1.130.

All persons interested in presenting their views and objections and recommendations in connection with the proposed changes are invited to do so on or before March 23, 1971, on which day a hearing will be held at 2 p.m., e.s.t., in Room 8C06, Building 2, 2011 Jefferson Davis Highway, Arlington, Va. All persons wishing to be heard orally are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person upon written request a reasonable time after the closing date for submitting comments.

The proposed changes, if adopted, will provide a basis for a revised procedure for treating amendments filed after a final rejection. A proposed additional section is added to incorporate the existing practice relative to affidavits.

The proposed procedure will provide that all timely filed first amendments after final rejection be entered as a matter of right, subject to the limitation that additional claims will not be entered beyond the number that would result in the total number of claims under prosecution equalling the number of claims finally rejected. Only those second and subsequent amendments which cancel claims will be entered as a matter of right. The entry and treatment of any other amendments filed at this stage will be entirely within the discretion of the examiner.

A distinction will be made between first amendments after final rejection filed within 2 months from the date of the final rejection and those filed after that period.

A first amendment after final rejection filed within 2 months of the final rejection will receive a full and complete advisory action as soon as possible after its receipt in the Patent Office. Under these circumstances, the revised procedure would permit the filing of an appeal within the period for response to the final rejection or within 1 month from the date of the advisory action, whichever is later. However, if an appeal had been filed before the mailing of the advisory action, the appeal brief would not be due until 2 months after the date of the advisory action.

Amendments filed later than 2 months after the date of the final rejection in nonappealed cases may be answered at the examiner's discretion, but no additional time will be allowed for appeal. However, if an appeal is filed in these cases, a full and complete advisory action will be rendered and the time for filing the brief will be extended to expire 2 months from the date of the advisory action.

After jurisdiction of an application transfers to the Board of Appeals, no amendments will be considered for entry except those restricted to cancellation of claims or copying claims for purposes of interference.

If new issues are presented in the claims as amended or presented after final rejection, they will be rejected in the advisory action on the ground of being drawn to new issues.

These rejections will be reviewable by the Board of Appeals as "adverse decisions of examiners" (35 U.S.C. 7).

The current practice of normally making the second action on the merits final and setting of a 3-month period for response will continue. However, the practice of granting an automatic 1-month extension of time if an amendment is filed (notices of Aug. 7, 1967; 841 O.G. 1411 and of Sept. 26, 1968; 855 O.G. 1109) will be terminated, and extensions of time at this stage of the prosecution will not be encouraged. Further, any extension of time granted after a final rejection will not affect the 2-month period and the privilege of an advisory action.

The present policy concerning consideration of affidavits, declarations, and exhibits will remain unchanged.

Holding of interviews after final rejection will be at the primary examiner's discretion.

This procedure will also allow the examiner to prepare examiner's answers which simply refer to the final rejection or the advisory action in most instances.

The sections, if amended as proposed, would read as follows:

§ 1.116 *Amendments after final action.*

* * * * *

(b) A first amendment presented after final rejection will be entered and considered, but the total number of claims under prosecution may not exceed the total number finally rejected. Entry of second and subsequent amendments after final rejection will normally be limited to only those which cancel claims.

(c) A first amendment filed within 2 months after the date of the final rejection, or after appeal, will receive a full and complete advisory action. If not previously filed, an appeal may be filed in such cases within the period for response to the final rejection or within 1 month from the date of the advisory action, whichever is later. In those cases where an appeal was filed before the date of the advisory action, the appeal brief is due 2 months after the date of the advisory action.

(d) After jurisdiction of an appealed case passes to the Board of Appeals no amendments may normally be made (see § 1.191(d)). After decision on appeal, amendments can only be made as provided in § 1.198, or to carry into effect a recommendation under § 1.196.

(e) Amendments after final rejection shall not introduce new issues into the prosecution.

§ 1.130 *Affidavits, declarations, or exhibits after final rejection.*

Affidavits, declarations, or exhibits submitted with a first reply after final rejection for the purpose of overcoming a new ground of rejection or requirement made in the final rejection, shall be admitted and considered. No other affidavit, declaration, or exhibit presented after final rejection will be admitted and considered without a showing of good and sufficient reasons why they were not earlier presented.

§ 1.191 *Appeal to Board of Appeals.*

(a) Every applicant for a patent or for reissue of a patent, any of the claims of which have been twice rejected, or who has been given a final rejection (§ 1.113) may, upon the payment of the fee required by law, appeal from the decision of the primary examiner to the Board of Appeals within the time allowed for response. (See § 1.116(c).)

* * * * *

(d) The jurisdiction of an appealed case is retained by the primary examiner until the time for filing a reply to the examiner's answer (§ 1.193(b)) has expired, at which time the Board of Appeals will take jurisdiction of the same.

§ 1.192 *Appellant's brief.*

(a) The appellant shall, within 2 months from the date of the appeal, or within the time allowed for response to the action appealed from, or within the time allowed in an advisory action (§ 1.116(b)), whichever is later, file a brief, accompanied by the requisite fee. Said brief shall include all of the authorities and arguments on which he will rely to maintain his appeal, including a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved, at the same time indicating if he desires an oral hearing. Two extra copies of the brief are required if an oral hearing is requested. Upon a showing of sufficient cause the time for filing the brief may be extended to a date not later than 2 months after the original expiration date. Any longer or further extensions must be sought from the Commissioner. All requests for extensions must be filed prior to the expiration of the period sought to be extended.

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§ 1.193 *Examiner's answer.*

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(b) The appellant may file a reply brief directed only to such new points of argument as may be raised in the examiner's answer, within 1 month from the date of such answer. However, if the examiner's answer states a new ground of rejection appellant may file a reply thereto within 2 months from the date of such answer; such reply may include any amendment or material appropriate to the new ground.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: January 22, 1971.

RICHARD O. SIMPSON,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 71-1167 Filed 1-27-71; 8:47 a.m.]

Pub. in 36 F.R. 1356-57, Jan. 28, 1971

[883 O.G. 880]

(Pending—No Final Action Taken)

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(119) DEPOSIT OF MICROORGANISMS

Some inventions which are the subject of patent applications depend on the use of microorganisms which must be described in the specification in accordance with 35 U.S.C. 112. No problem exists when the microorganisms used are known and readily available to the public. When the invention depends on the use of a microorganism which is not so known and readily available, applicants must take additional steps to comply with the requirements of Section 112.

In re Argoudelis et al., 168 USPQ 99 (CCPA, 1970), accepted a procedure for meeting the requirements of 35 U.S.C. 112. Accordingly, the Patent Office will accept the following as complying with the requirements of Section 112 for an adequate disclosure of the microorganism required to carry out the invention:

(1) The applicant, no later than the effective U.S. filing date of the application, has made a deposit of a culture of the microorganism in a depository affording permanence of the deposit and ready accessibility thereto by the public if a patent is granted, under conditions which assure (*a*) that access to the culture will be available during pendency of the patent application to one determined by the Commissioner to be entitled thereto under Rule 14 of the Rules of Practice in Patent Cases and 35 U.S.C. 122, and (*b*) that all restrictions on the availability to the public of the culture so deposited will be irrevocably removed upon the granting of the patent;

(2) Such deposit is referred to in the body of the specification as filed and is identified by deposit number, name and address of the depository, and the taxonomic description to the extent available is included in the specification; and

(3) The applicant or his assigns has provided assurance of permanent availability of the culture to the public through a depository meeting the requirements of (1). Such assurance may be in the form of an averment under oath or by declaration by the applicant to this effect.

A copy of the applicant's contract with the depository may be required by the Examiner to be made of record as evidence of making the culture available under the conditions stated above.

RICHARD A. WAHL,
Apr. 29, 1971. *Assistant Commissioner.*

[886 O.G. 638]

(120) EVIDENCE OF PATENTABILITY OR PRIORITY

[37 CFR Part 1]

Proposed Special Statement in Affidavit or Declaration When Relying Upon Facts, Data, Test Results or Other Evidence

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6) the Patent Office proposes to amend Title 37, Code of Federal Regulations, by adding a new § 1.69.

All persons are invited to present their views, objections, recommendations, or suggestions in connection with the proposed new section, to the Commissioner of Patents, Washington, D.C. 20231, on or before June 27, 1972, on which date a hearing will be held at 9 a.m. in Room 8C06, Building 2, Crystal Plaza, 2011 Jefferson Davis Highway, Arlington, Va. 22202. All persons wishing to be heard orally at the hearing are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person upon written request a reasonable time after the closing date for submitting comments.

New § 1.69 seeks to guard against the omission from facts, data, test results, or other evidence presented in connection with patentability or priority of invention, of known evidence which is inconsistent with that presented or which would convey a different impression. The purpose is to insure presentation to the Patent Office of the evidence needed to make an informed decision on patentability or priority of invention. The section thus requires a verified statement that no such inconsistent evidence is known to the person making the statement, if such is the fact.

The text of the proposed new § 1.69 is as follows:

§ 1.69 *Special statement in affidavit or declaration when relying upon facts, data, test results, or other evidence.*

(a) An affidavit or declaration filed during the prosecution of an application presenting evidence urged as bearing on patentability or priority of invention will be considered only if the applicant or other person making the affidavit or declaration states therein that no evidence is known to him which is inconsistent with that relied on in the affidavit or declaration, or which would tend to give an impression different from that conveyed by the affidavit or declaration.

(b) If, during the prosecution, the applicant, to establish patentability, relies on representations as to facts, data, or test results set forth in the specification, such representations will be considered for that purpose only if applicant files an affidavit or declaration attesting as to the truth of the representations and asserting that no facts, data, or test results are known to him which are inconsistent with those set forth in the specification, or which would tend to give an impression different from that conveyed by the specification.

Dated: April 28, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved: May 1, 1972.
JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[F.R. Doc. 72-6925; Filed 5-5-72; 8:49 a.m.]

Published in 37 F.R. 9225, May 6, 1972

[899 O.G. 2]

(Pending—No Final Action Taken)

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(121) STATUS OF RULE 69 PROPOSAL

This notice is in response to numerous inquiries received by the Patent Office relative to the status of the proposal, published at 37 F.R. 9225 on May 6, 1972 and at 899 O.G. 2 on June 6, 1972, to add a new section 1.69 to Title 37, Code of Federal Regulations.

All of the many written and oral comments received have been analyzed and are currently being studied. The analysis indicates that comments in favor of and against the principle of the rule were about evenly divided. Many comments expressed reservations concerning the language used. The "inconsistency" and "tend to give an impression" clauses drew the most criticism. The first clause was viewed as being too absolute, forcing the affiant or declarant to abdicate reasonable judgment concerning validity of seemingly inconsistent or maverick test results. The second clause was viewed as being too subjective or vague which would result in second guessing later. The additional burden on both applicants and examiners was also advanced as reason to change the proposed language.

In summary, the proposal is still under study with the view of developing a satisfactory way to accomplish the intent of the proposed rule.

S. WM. COCHRAN,
Nov. 22, 1972. *Solicitor.*

[905 O.G. 448]

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(122) STATEMENTS FILED UNDER ATOMIC ENERGY ACT AND NASA ACT

Attention is called to the provisions of section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) and section 305(c) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457). These statutes provide that the title to inventions useful in the production or utilization of special nuclear material or atomic energy, made or conceived in the course of or under any contract, subcontract, or arrangement entered into with or for the benefit of the Atomic Energy Commission, and any invention made in the performance of any work under any contract of the National Aeronautics and Space Administration, shall be vested in the United States. They also provide that no patent may be granted for any invention useful in the production or utilization of special nuclear material or atomic energy, or which in the opinion of the Commissioner has significant utility in the conduct of aeronautical or space activities, unless the applicant files with his application or within 30 days after request therefor by the Commissioner, a statement under oath setting forth (*a*) the full facts in regard to the making or conception of the invention, and (*b*) the situation with regard to the contractual relationships involving the Commission or the Administration. Careful attention should be given the exact wording of the requirements of whichever of these sections is pertinent in order to assure that all of the requirements are met. Since the duty of requiring the statements is placed by law on the Commissioner of Patents, it is incumbent on the Commissioner to determine whether the statements are timely filed and sufficient in substance to comply. Since these laws do not provide for any extension of the 30-day period or for reviving an application which has become abandoned for failure to file a proper statement, it is important that such statements be timely filed and that they do so comply in order to avoid loss of valuable patent rights.

The "full facts" involved in the conception and making of an invention should include those which are unique to that invention. The use of form paragraphs or printed forms which set forth only broad generalized statements of fact is not ordinarily regarded as meeting the requirements of these statutes.

This Office has construed the word "applicant" in both of these statutes to mean the inventor or joint inventors in person. Accordingly, in the ordinary situation, the statements must be signed by the inventor or joint inventors, if available. This construction is consistent with the fact that no other person could normally be more knowledgeable of the "full facts concerning the circumstances under which such invention was made," (42 U.S.C. 2457) or, "full facts surrounding the making or conception of the invention or discovery" (42 U.S.C. 2182).

In instances where an applicant does not have first-hand knowledge whether the invention involved work under any contract, subcontract, or arrangement with or for the benefit of the Atomic Energy Commission, or had any relationship to any work under any contract of the National Aeronautics and Space Administration, and includes in his statement information of this nature derived from others, his statement should identify the source of his information. Alternatively, the statement by the applicant could be accompanied by a supplemental declaration or oath, as to the contractual matters, by the assignee or other person, e.g., an employee thereof, who has the requisite knowledge.

Where an applicant is deceased or incompetent, or where it is shown to the satisfaction of this Office that he refuses to furnish a statement or cannot be reached after diligent efforts, declarations or statements under oath setting forth

the information required by the statutes may be accepted from an officer or employee of the assignee who has sufficient knowledge of the facts. The offer of such substitute statements should be based on the actual unavailability of or refusal by the applicant, rather than mere inconvenience. Where it is shown that one of joint inventors is deceased or unavailable, a statement by all of the other joint inventor(s) may be accepted.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Aug. 13, 1973.

[914 O.G. 2]

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(123) APPLICATIONS RELATED TO ENERGY

In his Message of April 18, 1973, to The Congress "Concerning Energy Resources," the President stated that "with 6 percent of the world's population, we consume almost a third of all the energy used in the world." The President noted that our energy demands "now outstrip our available supplies, and at our present rate of growth, our energy needs a dozen years from now will be nearly double what they were in 1970." The President's Message of April 18 called for the development of a more comprehensive, integrated national energy policy and announced specific steps to carry out the policy. On June 29, 1973, the President announced a series of additional actions to deal with the Nation's energy problem. Among those actions were major efforts in energy research and development and in energy conservation.

In order to enhance and further the goals and actions announced by the President, the Patent Office will, on request, accord "special" status to all patent applications for inventions which materially contribute to (1) the discovery or development of energy resources, and (2) the more efficient utilization and conservation of energy resources. Examples of inventions in category (1) would be those relating to further developments in fossil fuels (natural gas, coal, and petroleum), nuclear energy, solar energy, etc. Category (2) would include inventions relating to the reduction of energy consumption in combustion systems, industrial equipment, household appliances, etc. In order that the Patent Office may implement this procedure, we request that all applicants desiring to participate in this program request that their applications be accorded "special" status. Such requests should be written, should identify the application by serial number and filing date, and should be accompanied by affidavits or declarations under rule 102 by the applicant or his attorney or agent explaining how the invention materially contributes to category (1) or (2) set forth above.

Requests should be addressed to the Commissioner of Patents, Washington, D.C. 20231.

RENE D. TEGTMEYER,
Acting Commissioner of Patents.

Date: Oct. 26, 1973.

Approved:

BETSY ANCKER-JOHNSON, Ph.D.,
Assistant Secretary for Science and Technology.

[916 O.G. 2]

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(124) PROTESTS TO THE GRANT OF A PATENT

[37 CFR Part 1]

Notice of Proposed Rule Making

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), as amended Oct. 5, 1971, Public Law 92-132, 85 Stat. 364, the Patent Office proposes to amend title 37 of the Code of Federal Regulations by revising §§ 1.11(b) and 1.291.

All persons are invited to present their views, objections, recommendations, or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C., 20231, on or before Oct. 31, 1973, on which date a hearing will be held at 9:30 a.m. in Room 11C24, Building 3, 2021 Jefferson Davis Highway, Arlington, Va. All persons wishing to be heard orally at the hearing are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person, upon written request, a reasonable time after the closing date for submitting comments.

The underlying purpose of the proposed rule change is to assure that the best art and information relevant to the patentability of an application for patent are brought to the Patent Office's attention. Under present procedures, ex parte examination of patent applications is conducted as thoroughly and in as effective a manner as possible. However, it is noted that a significant number of patents involved in litigation are held invalid because prior art or other information having a bearing on patentability, which was not known to the examiner during the prosecution of the case, is brought to the court's attention.

The proposed rule change is designed to elicit this additional prior art or other information. An applicant would be given the opportunity to open his application to public inspection prior to issuance of a patent. The public would then have the opportunity to bring to the attention of the Office information which bears on the question of patentability of the pending patent application. Presumably, interested and affected members of the public may be aware of relevant prior art which the Office did not find, or might know of other information unavailable to the Office, bearing on the question of patentability. If in the opinion of the Commissioner, consideration of such new evidence would lead to a more complete appraisal of patentability, the Commissioner may reopen prosecution of the application.

It is believed that there are several benefits which this proposed procedure would bring about. First, applicants would benefit from a more meaningful presumption of validity where a patent is issued after appropriate consideration of evidence submitted by the public under this procedure. Second, potential competitors of the applicant would benefit from having the opportunity to call to the attention of the Office information that could either prevent a patent from issuing or lead to claims of more restricted scope. And by use of the proposed procedure such determinations would be helpful in avoiding the more expensive conventional procedure following the issue of the patent, of litigating the questions of validity and scope of such patent on the same grounds at a later date. Finally, the public would benefit from the resultant strengthening of the presumption of validity of patents granted on applications which underwent this procedure and the strengthening of the patent system for its intended purposes.

Paragraph (b) of § 1.11 is proposed to be amended to allow the Patent Office to open the file of a pending patent application to the public in accordance with a written authorization from the applicant as specified in the proposed § 1.291(b).

It is proposed to amend present § 1.291 by incorporating a new paragraph (a) which provides that protests filed by the public to the grant of a patent, including the identity of the protesting party, be made of record in the patent application concerned, if such application is identified by the protesting party. The proposed rule change would also afford the examiner an opportunity to ask the protesting party for submission of additional evidence bearing on the question of patentability. Any such evidence received would be forwarded to the applicant. Under § 1.291(a) the protesting party would not be permitted to inspect the application file.

In paragraphs (b), (c) and (d) of § 1.291, a new procedure is proposed whereby an applicant, whose application for patent has been indicated as being allowable by the examiner (Form PO-327), may within thirty days of such indication authorize the Office to open his application to public inspection. The application would be available for inspection for a period of three months from the time a notice to that effect appeared in the OFFICIAL GAZETTE. The notice would be in the form of a publication of data necessary to identify the application in question and would include a representative illustration of the invention, the most comprehensive claim, and a listing of references cited by the Patent Office. The applicant would be charged a fee of $25.00 to defray the printcost of this notice in the OFFICIAL GAZETTE.

On the basis of such notice, any person would be permitted access to the application in question and could obtain copies of any papers contained therein (see proposed amendment to § 1.11(b)).

If any person, after inspection of an application, is of the opinion that the relevant prior art of record is not complete, he can notify the Commissioner and the applicant in writing, of any grounds, including additional publications or patents, which he believes have a bearing on the patentability of any

claim contained in such application, together with an explanation of the relevance of such publications or patents to the allowed claims. He would, in addition or alternatively, have the opportunity to comment on the manner in which the prior art of record was applied and raise any other matter which could affect the patentability of the claimed invention.

All evidence and comments received in this fashion, including the identity of the protesting party, would be made of record in the application after the time period for protest had elapsed. The protesting party would thereafter be privy to all further proceedings in the Patent Office insofar as they relate to the evidence he submitted. If, in the opinion of the Commissioner, such evidence constituted a prima facie showing of non-patentability of the subject matter as claimed, or unenforceability of a patent if granted, prosecution of the application would be reopened.

As a result of any reexamination of the application, the applicant would be permitted to present amended or new claims which would be subject to a determination of patentability by a primary examiner. The protesting party who made evidence of non-patentability available to the Patent Office would be informed of any action taken by the Office and given the opportunity to comment thereon.

In cases involving evidence of prior public use or sale of the invention, the procedure outlined in present § 1.292 would be utilized to provide the person presenting such evidence with an opportunity to be heard.

An adverse determination to the patentability of any claim may, of course, be appealed by the applicant to the Board of Appeals under § 1.191.

Applications considered under the above procedure and ultimately allowed after a decision by the Board of Appeals would not be reconsidered under this proposed procedure. If, after the three-month period from the date of publication, no evidence was received or if in the opinion of the Commissioner the evidence submitted does not bar the granting of a patent on grounds of patentability or enforceability, a notice of allowance (Form POL–85) would be transmitted in due course. This determination would be final and not subject to petition by the protesting party.

The text of the proposed amended sections is as follows:

§ 1.11 *Files open to the public.*

* * * * *

(b) Applications in which the Office has accepted a request filed under § 1.139 or received an authorization under § 1.291 (b), are open to inspection by the general public, and copies may be furnished upon paying the fee therefor.

§ 1.291 *Protests to the grant of a patent.*

(a) The patent statutes do not provide for protests to the grant of a patent as a matter of right on the part of the public. Where protests to the grant of a patent are filed with the Office, and the protesting party identifies the application, the protest papers will be referred to the examiner having charge of the application. In such case, the protest papers, including the identity of the protesting party, will be placed in the application file and a copy will be forwarded to the applicant. The examiner may request submission of further evidence from the protesting party, and any further evidence adduced will be made of record and also forwarded to the applicant. However, the protesting party will not be permitted to inspect the application file unless the Office has received an authorization under paragraph (b) of this section or § 1.14 (a). Where the protesting party cannot identify the application, the protest will be acknowledged and referred to the examiner having charge of the subject matter involved for his information.

(b) Applications may be voluntarily opened to public inspection. Within thirty days from the mailing date of a notice of allowability from the examiner, an applicant may waive his right to have his pending application for patent kept in confidence (§ 1.14). Such waiver may be accomplished by filing in the Office a written authorization, signed by the applicant and assignee of record or by the attorney or agent of record, to open the complete application to inspection and protest by the general public to the granting thereof, together with a fee of $25.00.

(c) Upon receipt of an authorization under paragraph (b) of this section, the Office shall publish suitable notice of such fact in the OFFICIAL GAZETTE together with a representative illustration of the invention, the most comprehensive claim, and a listing of references cited by the Patent Office. At anytime up to three months thereafter, any person may protest the grant of a patent by filing with the Commissioner and serving the applicant with publications, patents or any other information which might have a bearing on the patentability of any claims contained in the patent application or on the enforceability of any patent issuing on said application; said protest must include a memorandum explaining the relevance of the submitted evidence. All protest papers filed, together with the identity of the real party in interest originating the protest shall be made of record in the application after the time period for protest has elapsed. Examination of the application shall be reopened if, in the opinion of the Commissioner, it appear that any claim thereof may not be patentable or any patent granted on said application would be unenforceable in view of such evidence. In the event that examination is reopened, the protesting party shall be apprised of all further proceedings in the Patent Office insofar as they relate to or are concerned with the evidence submitted by the protesting party, and accorded the opportunity to comment thereon. All further papers received from the protestor will be made of record. If the examination of the application is not reopened, the protesting party shall be so apprised. A decision by the Commissioner not to reopen an application for examination after the close of the protest period, shall be final and not subject to petition by the protesting party. In cases involving evidence of public use or sale of the invention more than one year before the filing of the application, the procedure outlined in § 1.292 shall be followed.

(d) The transmittal of a formal notice of allowance shall be held in abeyance until the patentability of the claimed invention has been determined in light of such evidence. If no protest to patentability is submitted to the Commissioner within the time specified, or if he determines that no further examination is necessary, a notice of allowance shall be transmitted to the applicant, his attorney or his agent in due course. A copy of said notice of allowance will also be forwarded to the protesting party.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Date: May 15, 1973.

Approved:
DR. BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

(Pub. FR 1469, June 4, 1973)

[911 O.G. 760]

(Pending—No Final Action Taken)

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(125) QUALITY REVIEW PROGRAM FOR EXAMINED PATENT APPLICATIONS

A new Quality Review Program was instituted in the U.S. Patent Office on April 1, 1974.

The purpose of the program is to evaluate the quality of the product of the patent examining process and to assist in determining where substantive and procedural adjustments in the patent examination process are appropriate.

The program involves randomly selecting a sample of allowed applications from each of the Art Units in the Patent Examining Corps before the applications are forwarded to the Patent Issue Division for Mailing of the "Notice of Allowance." The quality review will be concerned with three major aspects of the patent examining process, namely:

(1) patentability of the allowed claims in view of the prior art of record or other reasons determined by the reviewer.
(2) compliance with current examining practices and procedures; and
(3) correctness of the field of search and the classification of each application.

The quality review program also provides for the research of some of the allowed applications in the sample.

If, during the quality review process, it is determined that one or more claims of a reviewed application are clearly unpatentable, the prosecution of the application will be reopened. Only those applications wherein the prosecution has

been reopened will reflect in the record that a quality review has taken place.

C. MARSHALL DANN,
Apr. 2, 1974. *Commissioner of Patents.*

[921 O.G. 1742]

(126) CLAIMS COPIED FROM PATENTS

Applicants and their attorneys or agents are reminded of the requirement of Rule 205(b) (37 CFR 1.205(b)) of the Rules of Practice that "Where an applicant presents a claim copied or substantially copied from a patent, he must, at the time he presents the claim, identify the patent, give the number of the patented claim, and specifically apply the terms of the copied claim to his own disclosure, unless the claim is copied in response to a suggestion by the Office."

The requirement of Rule 205(b) (37 CFR 1.205(b)) applies to claims copied in an application at the time of filing as well as to claims copied in an amendment to a pending application. If an applicant, attorney, or agent presents a claim copied or substantially copied from a patent without complying with Rule 205(b) (37 CFR 1.205(b)) the examiner may be led into making an action different from what he would have made had he been in possession of all the facts. Therefore, failure to comply with Rule 205(b) (37 CFR 1.205(b)), when submitting a claim copied from a patent, may result in the issuance of an Order To Show Cause why the application should not be stricken from the files of the Patent Office. If a satisfactory answer is not filed within the period set in the Order it may be necessary to strike the application under Rule 56 (37 CFR 1.56).

This reminder is being published to emphasize to applicants and their attorneys or agents the importance of complying with the requirement of Rule 205(b) (37 CFR 1.205(b)) at the time the claim is copied.

WILLIAM FELDMAN,
Apr. 10, 1974. *Acting Assistant Commissioner for Patents.*

[922 O.G. 442]

(127) TRIAL VOLUNTARY PROTEST PROGRAM

After reviewing the comments received as a result of the Notice of Proposed Rule Making entitled, "Protests to the Grant of a Patent," dated May 15, 1973, published at 911 O.G. 760, the Patent Office has decided to institute a Trial Voluntary Protest Program limited to 2,000 applications.

The underlying purpose of protest proceedings is to assist the Patent Office by bringing the best prior art and information relevant to the patentability of a patent application to the examiner's attention. Occasionally patents are held invalid by the courts because of prior art or other information which was not available or known to the examiner. Protest proceedings are intended to elicit from the public such prior art or other information not cited by the examiner which bears upon the question of patentability.

Several benefits are expected to accrue from protest proceedings. First, patents would have a more meaningful presumption of validity because of appropriate consideration by the examiner of additional evidence submitted by the public. Second, potential competitors of the applicant would benefit from having the opportunity to call to the attention of the Patent Office information that could either prevent a patent from issuing or lead to claims of more restricted scope. Further, the protest proceedings may be helpful in minimizing the more expensive conventional procedure of litigating the question of validity at a later date. Finally, the public would benefit from the resultant strengthening of the presumption of validity of patents granted on applications which underwent protest proceedings and the strengthening of the patent system for its intended purposes.

Since legislation is pending in Congress which would make opposition or protest proceedings mandatory in all allowed applications, it appears appropriate and desirable to gain some experience at this time with a Trial Voluntary Protest Program. The Patent Office would welcome any comments, from those who elect to participate in the program, relative to their experience concerning the effectiveness, costs, etc.

Since the trial program is voluntary and limited to a selected number of applications, no rule changes are contemplated or considered necessary at this time.

APPLICATIONS INVOLVED

The 2,000 applications involved in the Trial Voluntary Protest Program will include 135 applications allowed in each of the 14 examining groups excluding Group 220, and 110 applications allowed in Group 220, after July 1, 1974. No other applications will be made part of the trial program. The applications in the trial will be limited to the 1970 filing date series and will exclude all reissue, plant, and design applications. Also, applications which have been involved in proceedings before the Board of Appeals, the Board of Patent Interferences, or the courts will be excluded from the trial program.

WAIVER OF CONFIDENTIALITY

A form letter will be sent to the applicant of each of the 2,000 applications involved in the trial. The letter will indicate that the application is one of the selected applications and will afford to applicant the opportunity to participate in the program by filing a voluntary waiver of confidentiality thereby making his application available for protest.

RESPONSE TO REQUEST FOR WAIVER OF CONFIDENTIALITY

The applicant will have two months after the mailing of the form letter concerning waiver of confidentiality to either (1) file the waiver of his right to keep the application confidential, signed by the applicant, assignee of record, or attorney or agent of record, or (2) indicate that he does not desire to participate in the trial program. A response from the applicant to the form letter will be requested. Such response is considered desirable to allow prompt processing of all 2,000 applications selected for the Trial Voluntary Protest Program. No extension of the two month period will be granted.

If the applicant declines to participate in the program, his application will be forwarded to the Patent Issue Division for mailing of the Notice of Allowance. In these situations no record of the correspondence will be made in the application file. Also, the Patent Office will not keep any records concerning the identity of the particular applications where the opportunity to participate in the program was declined.

If a proper waiver of the right to confidentiality is submitted within two months of the date of the form letter regarding voluntary waiver, the application will be placed in the Trial Voluntary Protest Program.

Following an affirmative response a notice, identifying the application will be published in the OFFICIAL GAZETTE similar to that used for patents. The notice will include necessary identifying information, including the examining group to which the application is assigned, an illustrative figure, a representative claim or claims, and a listing of references cited by the Patent Office.

On the date the notice is published in the OFFICIAL GAZETTE, the application file will also be made available for public inspection for the duration of the protest period in the examining group and the application will be available in printed form similar to a patent. The printed application will include all the figures and the specification, including claims. All printed applications will be classified and placed in the Patent Office search files. Copies of the printed applications will be available to the public at the prices set by statute for patent copies.

PERIOD FOR FILING PROTEST

Protesters will have a period of three months running from date of publication of the notice in the OFFICIAL GAZETTE in which to file their protest in the Patent Office. Each protest must be filed in duplicate, and include the grounds which the protester believes have a bearing on the patentability of any claim contained in the published application. If the grounds are based on prior art, the protest should include a copy of the prior art together with an explanation of the relevance of such prior art to the allowed claims. In addition or alternatively, the protester will have the opportunity to comment on the manner in which the prior art of record was applied and raise any other matter which may affect the patentability of the claimed invention. In cases where prima facie evidence is presented as to prior public use or sale of the invention, the public use proceedings set forth in Rule 292 will be used

to provide the protester presenting such evidence with an opportunity to be heard. No extension of the three month period will be granted.

PROTESTER INVOLVEMENT

A protester may elect to either (1) have his identity kept secret and have no further participation in the proceedings or (2) be recognized in the application file and become involved in any future prosecution of the application.

In both instances the protester must initially identify himself and give his address; however, if he elects to forego future involvement, he may identify himself on a cover letter and request that the cover letter not be made of record. In such instances the cover letter will be destroyed upon completion of prosecution when the application is forwarded to either Patent Issue Division or the abandoned files.

CONSIDERATION OF PROTEST

The published allowed application files will be retained during the protest period in the examining groups. The examining groups will receive all protests filed, acknowledge receipt thereof, and make them of record in the application files. At the end of the period for filing protests, three months after publication in the OFFICIAL GAZETTE, those applications in which no protests have been filed will be forwarded to the Patent Issue Division for mailing of the Notice of Allowance, while those applications in which protests have been filed will be referred to the group director for decision as to whether prosecution should be reopened.

If the group director decides that the evidence submitted does not constitute a prima facie showing of non-patentability of any allowed claim, the application will be forwarded to the Patent Issue Division for mailing of the Notice of Allowance. The protesters who elected to participate in subsequent prosecution will be notified that the prosecution has not been reopened, and the applicant will be sent the duplicate copy of all protests. The group director's decision will be final and not subject to petition by any protester.

If the group director decides that the submitted evidence constitutes a prima facie showing of non-patentability of any allowed claim, prosecution of the application will be reopened and the application will be re-examined. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim believed unpatentable. The duplicate copy of all protests will be mailed to the applicant with the Office action. Protesters who elected to participate in later prosecution and submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters who elected to participate in later prosecution will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

RESPONSE TO SUBSEQUENT OFFICE ACTIONS BY THE APPLICANT

As a result of re-examination of the application, the applicant will be permitted to respond, such as by presenting amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters, who submitted evidence on which a rejection in the Office action is based and who elected to participate in later prosecution, to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response, including appeal brief, filed. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

COMMENT ON APPLICANT'S RESPONSE BY THE PROTESTER

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

CONCLUSION OF PROSECUTION

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified thereof and the application will be forwarded to the Patent Issue Division. A decision of the primary examiner to allow an application will not be subject to petition by any protester.

C. MARSHALL DANN,
May 7, 1974. *Commissioner of Patents.*

[923 O.G. 2]

AMENDMENTS

(128) AMENDMENTS—BASIS IN ORIGINAL DISCLOSURE MANUAL OF PATENT EXAMINING PROCEDURE

When an amendment is filed in response to an objection or rejection based on incomplete disclosure, a study of the entire application is often necessary to determine whether or not "new matter" is involved. In the interest of expeditious prosecution, Examiners are directed, whenever such an objection or rejection is made, to call attention to Rule 111(c). Applicant should specifically point out the support for any amendments made to the disclosure.

RICHARD A. WAHL,
Aug. 13, 1965. *Assistant Commissioner.*

[818 O.G. 4]

(129) EXAMINER'S AMENDMENT PRACTICE

The present practice in making Examiner's Amendments when passing an application to issue is modified to permit the amendment or cancellation of claims where these have been authorized by applicant (or his representative) in a telephone or personal interview. The Examiner's Amendment should include a statement indicating that the changes were authorized, the date and type (personal or telephone) of interview, and with whom it was had.

The current policy prohibiting changes in the drawing and/or description of an application is maintained with the exceptions noted in MPEP Section 1302.04.

The new procedure resulted from an employee's suggestion.

RICHARD A. WAHL,
May 11, 1966. *Assistant Commissioner.*

[827 O.G. 2]

(130) BRACKETS AND RULE 121—AMENDMENT OF CLAIMS

In view of the number of inquiries requesting an interpretation of the word "brackets" appearing in amended Rule 121 concerned with the amendment of claims, it is thought that clarification is desirable.

The term brackets [ ] as set forth in the amendment to Rule 121 and first announced in 843 O.G. 373 does not encompass and is to be distinguished from parentheses ( ). Therefore, any amendment using parentheses to indicate cancelled matter in a claim rewritten under Rule 121(b) may be held non-responsive in accordance with Rule 121(c).

RICHARD A. WAHL,
Jan. 15, 1968. *Assistant Commissioner.*

[847 O.G. 331]

INTERVIEWS

(131) INTERVIEW PRACTICE

To assist in early and equitable conclusion of examination of applications, the use of interviews in person or by telephone is encouraged, subject to the following guidelines.

Interviews with Examiners, whether in person or by telephone, shall be governed in general by the provisions of Rule 133. A request for an interview, whether made orally or in

writing, before the first Office action is untimely and will not be acknowledged if written, or granted if oral; Rule 133(a).

If upon examination or re-examination, it is found that *minor* changes could be made to place the application in condition for allowance, the attorney or pro se inventor should be so notified by telephone. This practice should be followed whether or not there has been a specific request for interview or for such notification.

Where an interview is arranged, both the Examiner and the attorney should be familiar with the issues in the application before starting the conference. It is the responsibility of both parties to the interview to see that it is not extended beyond a reasonable time, usually not longer than thirty minutes. The Primary Examiner personally responsible for the final disposition of the application should be notified of the results of the interview at its conclusion.

Interviews in person or by telephone are to be encouraged after the first Office action on the merits. In addition to interviews initiated by applicant, the Examiner may initiate interviews where he believes it would be productive. This practice may result in the filing of a first response that will so effectively advance the prosecution to permit disposing of the case in a bare minimum number of actions. The telephone procedure set forth in part 4 of Optimum Examining Procedure Memorandum #3, 801 O.G. 267, *requiring* a call by the Examiner, if requested by applicant, before taking final action has been found not satisfactory and will no longer be followed.

An interview may be granted after final rejection; however, except in rare instances, only one such interview should be granted.

An interview should not be requested or approved, except in very unusual circumstances, after filing of a Brief on appeal or after an application has been passed to issue by the Primary Examiner.

Interviews are permissible any working day of the week except on overtime Saturdays.

RICHARD A. WAHL,
Acting Superintendent,
Sept. 16, 1964. *Patent Examining Corps.*

[807 O.G. 307]

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(132) TELEPHONE INTERVIEWS

Present Office policy places great emphasis on telephone interviews initiated by the Examiner. For this reason, it is no longer deemed necessary for an attorney to request a telephone interview as specified in the old Optimum Examining Procedure memos. Examiners are no longer required to note or acknowledge requests for telephone calls or state reasons why such proposed telephone interviews would not be considered effective to advance prosecution. However, it is still desirable for an attorney to call the Examiner if the attorney feels the call will be beneficial to advance prosecution of the case.

RICHARD A. WAHL,
Oct. 11, 1967. *Assistant Commissioner.*

[846 O.G. 1022]

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(133) RECORD OF INTERVIEWS IN PATENT APPLICATIONS

Applicants and their attorneys or agents are reminded that a complete written statement as to the substance of any interview with regard to an application must be made of record in the application, whether or not an agreement with the examiner was reached at the interview. The necessity to so complete the record of an application is emphasized by the requirements of Rules 2 and 133(b). Rule 2 provides in part that

> "All business with the Patent Office should be transacted in writing.
>
> * * * * *
>
> "The action of the Patent Office will be based exclusively on the written record in the Office."

Obviously, the action of the Patent Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews. In addition to the requirement of Rule 2, Rule 133(b) is specific that

> "In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for response to Office actions as specified in Rules 111, 135."

Applicants and their attorneys or agents are responsible for compliance with the requirement for a complete written statement except in those situations in which it is agreed that the examiner will issue an Office action upon the application without further written response on behalf of applicant. In those situations, the examiner will make the substance of the interview of record in the Office action. The examiner may also complete the record of an interview if significant matters are inadvertently omitted from a written statement filed on behalf of applicant.

Noncompliance on behalf of applicant with the above noted requirement for a complete written statement when filing a response, will result in the applicant being given one month from the date of the notifying letter or the remainder of any period for response, whichever is longer, to complete the response and thereby avoid abandonment of the application (Rule 135(c)). Except for the paragraphs under the heading "EXAMINER TO CHECK FOR ACCURACY" the substance of this notice supersedes Section 713.04 of the Manual of Patent Examining Procedure.

WILLIAM FELDMAN,
Aug. 9, 1974. *Deputy Assistant Commissioner for Patents.*

[926 O.G. 2]

JOINDER

(134) PRACTICE RE MARKUSH-TYPE CLAIMS

This notice deals with Markush-type claims which include a plurality of alternatively usable substances or members. In most cases this recitation by enumeration is used because there is no appropriate or true generic language.

Where an application claims two or more independent and distinct inventions, the Commissioner, under the provisions of 35 U.S.C. 121, may require the application to be restricted to one of the inventions.

A Markush-type claim is directed to "independent and distinct inventions," if two or more of its members are so unrelated and diverse that a prior art reference anticipating the claim with respect to one of the members would not render the claim obvious under 35 U.S.C. 103 with respect to the other member(s).

If the claim is of that nature, the examiner is authorized to reject it as an improper Markush claim and for misjoinder under 35 U.S.C. 121 and to require the applicant to restrict the application to a single invention. In making such a requirement, the examiner will (1) clearly delineate the members or groups of members believed to constitute improperly joined inventions, and (2) state reasons fully explaining why they are independent and distinct. Applicant's response to such a requirement should be an election of a single adequately disclosed and supported invention, with or without restriction of the claim(s) to that invention. Of course, the response must not introduce new matter into the application. See 35 U.S.C. 132 and *In re Welstead,* 59 CCPA 1105, 463 F. 2d 1110, 174 USPQ 449 (1972). A refusal to elect a single invention will be treated as a non-responsive reply.

If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it is directed to independent and distinct inventions. In such a case, the examiner will not follow the procedure outlined in the preceding paragraph and will not require restriction.

Where the examiner has rejected the claim and required restriction and the applicant has responded without restricting the claim(s) to a single invention, the examiner shall,

if the position is adhered to, again reject the claim and any other Markush claims not restricted to the elected invention. No further examination of these claims is required unless and until such rejection has been overcome. However, if the search of the single elected invention develops prior art which would render both the elected invention and the improper Markush claim(s) unpatentable, such prior art may be applied in rejections of both without a complete search of the subject matter of the improper Markush claim(s). Otherwise, only true generic claims and those restricted to the elected invention will be examined in the usual manner.

Review of the rejection will be by appeal to the Board of Appeals under 35 U.S.C. 134.

C. MARSHALL DANN,
May 1, 1974. *Commissioner of Patents.*

[922 O.G. 1016]

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(135) TELEPHONE PRACTICE IN RESTRICTION AND ELECTION OF SPECIES SITUATIONS

If an examiner determines that a requirement for restriction should be made in an application, he should formulate a draft of such restriction requirement including, if any, the grounds of rejection of linking or generic claims. Thereupon, he should telephone the attorney of record and ask if he will make an oral election, with or without traverse if desired, after the attorney has had time to consider the restriction requirement. The examiner should arrange for a second telephone call within a reasonable time, generally within three working days. If the attorney objects to making an oral election, or fails to respond, the usual restriction letter will be mailed, and this letter should NOT contain any reference to the unsuccessful telephone call.

When an oral election is made, the examiner will then proceed to incorporate into his letter a formal restriction requirement including the date of the election, the attorney's name, and a complete record of the telephone interview, followed by a complete action on the elected claims including linking or generic claims if present.

If on examination the examiner finds the elected claims to be allowable and no traverse was made, the letter should be written on POL–37 (Examiner's Amendment) and should include cancellation of the non-elected claims, a statement that the prosecution is closed and that a notice of allowance will be sent in due course. Correction of formal matters in the above-noted situation which cannot be handled by a telephone call and thus requires action by the applicant should be handled under the *Ex parte Quayle* practice, using POL–90; these would usually be drawing corrections or the like requiring payment of charges.

Should the elected claims be found allowable in the first action, and an oral traverse was noted, the examiner should include in his action a statement under Section 821.01, M.P.E.P., making the restriction final and giving applicant thirty days (Rule 136) to either cancel the non-elected claims or take other appropriate action. Failure to take action will be treated as an authorization to cancel the non-elected claims by an Examiner's Amendment and pass the case to issue. Prosecution of this application is otherwise closed.

In either situation (traverse or no traverse), caution should be exercised to determine if any of the allowed claims are linking or generic before cancelling the non-elected claims.

Where the respective inventions are located in different groups the requirement for restriction should be made only after consultation with and approval by all groups involved. If an oral election would cause the application to be examined in another group, the initiating group should transfer the application with a signed memorandum of the restriction requirement and a record of the interview. The receiving group will incorporate the substance of this memorandum in its official letter as indicated above. Differences as to restriction should be settled by the existing chain of command, e.g. Supervisory Primary Examiner or Manager.

This practice is limited to use by examiners who have at least negotiation authority. Other examiners must have the prior approval of their Supervisory Primary Examiner.

RICHARD A. WAHL,
Jan. 27, 1966. *Assistant Commissioner.*

[824 O.G. 408]

(136) RESTRICTION AND ELECTION PRACTICE

Effective April 1, the practice and procedure in cases involving a requirement for restriction or election is changed as indicated below.

Under the new practice, whenever a written or telephoned requirement is made in a case which includes claims considered by the Examiner to be generic or linking, it will not include any rejection of these claims. The Examiner should specify which claims are considered to be generic or linking.

Although no art will be cited where linking claims are present, a search should be made and art cited where generic claims are involved. In the latter situation the generic claims will not be rejected but merely indicated as not allowable in view of the cited art (Rule 146).

A 30-day shortened statutory period will be set for response to a written requirement. Such action will not be an "action on the merits" for the purpose of the second action final program. In either situation, with linking or generic claims, a response, to be complete, need only include a proper election.

The only exception to the above practice will be in the case where the Examiner gives a complete action on the merits of all the claims in addition to the requirement for restriction.

The use of the telephone to make an initial requirement will be continued and is encouraged.

RICHARD A. WAHL,
Feb. 28, 1967. *Assistant Commissioner.*

[837 O.G. 668]

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(137) ELECTION OF SPECIES

Effective June 1, 1967, the following practice will be instituted on a trial basis for 6 months.

In cases involving Markush claims or generic claims of the formula type including such a number and diversity of members as to require an unduly extensive and burdensome search for the embodiments encompassed, the Examiner may require election of species without a search on the merits (Rule 105).

The election requirement may be made in the same manner as that described in the Change Notice 12–6 of Feb. 28, 1967, with a 30 day shortened statutory period which will not be an "action on the merits" for the purpose of second action final program. If a telephone requirement, made by the Examiner, is complied with the first written action will be a complete action on the merits and the usual 3 months shortened statutory period will be set.

As pointed out in Change Notice 12–6, the use of the telephone to make an initial requirement will be continued and is encouraged.

EDWARD J. BRENNER,
May 4, 1967. *Commissioner.*

[838 O.G. 1223]

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(138) ELECTION OF SPECIES

The practice set forth in the Notice of May 4, 1967 (838 O.G. 1223) is made permanent and modified to permit a requirement for election of species in cases involving multiple species whether or not generic claims are present or searched prior to the election. Also, if no claims to species are presented but the generic claim is of the burdensome type referred to in the Notice, a requirement for election of species prior to search of the generic claims should be made.

As in the original Notice, if an election is made pursuant to a telephone requirement, the action should include a full and complete action on the elected species as well as on any generic claims that might be present. If generic claims are found allowable, no change in the practice currently in effect is contemplated.

RICHARD A. WAHL,
Aug. 19, 1968. *Assistant Commissioner.*

[854 O.G. 287]

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(139) NON-ELECTED CLAIMS

In the interest of expediting the prosecution of pending applications, the following change in procedure is made. When preparing a final action in an application where there has

been a traversal of a requirement for restriction or election of species, the Examiner should indicate in his action that a complete response must include cancellation of the non-elected claims or other appropriate action (Rule 144).

In the above situations where a response to the final action has otherwise placed the application in condition for allowance, the failure to take appropriate action with respect to the non-elected claims will be construed as authorization to cancel these claims by Examiner's Amendment and pass the case to issue after the expiration of the statutory period.

RICHARD A. WAHL,
May 24, 1968. *Assistant Commissioner.*

[851 O.G. 893]

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(140) RESTRICTION BETWEEN INVENTIONS

Combination claims (other than genus claims linking species claims), whether allowable, allowed, or not, will no longer automatically be permitted to serve as a basis for joining claimed inventions which otherwise would be properly the subject of a restriction requirement. In other words, applicant will be required to elect one of the claimed inventions which are the subject of a proper restriction requirement. Combination claims, formerly considered linking claims should be grouped as a separate invention. Rejoinder of the divided inventions, should any combination claim be allowed, however, also will no longer automatically be permitted. The statutory criteria for distinctness will be satisfied if the subcombinations and/or combinations involved are shown to be separately classified, or to have acquired a separate status in the art, or to involve different fields of search.

RICHARD A. WAHL,
June 20, 1968. *Assistant Commissioner.*

[852 O.G. 509]

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(141) RESTRICTION PRACTICE

[37 CFR Part 1]

Notice of Proposed Rule Making

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), as amended October 5, 1971, Public Law 92–132, 85 Stat. 364, the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.141, 1.142, 1.144, 1.145, and 1.146.

All persons are invited to present their views, objections, recommendations or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231 on or before December 12, 1972, on which date a hearing will be held at 9:30 a.m. in Room 11 C 24, Building 3, 2021 Jefferson Davis Highway, Arlington, Va. All persons wishing to be heard orally at the hearing are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person, upon written request, a reasonable time after the closing date for submitting comments.

The proposed changes have three main purposes, (1) to clarify when a requirement for restriction may properly be made by an examiner, (2) to remove the limitation of five species if there is an allowable generic claim in the case, and (3) to provide a basis in the rules for requiring restriction to a single invention when two or more patentably different inventions are claimed in a single Markush-type claim. See "Ex parte Markush," 1925 C.D. 126 (Comm'r. Pat. 1924).

The expression "patentably different" emphasizes the importance of requiring restriction between two or more inventions only where there are unobvious differences between those inventions and separate patents can properly be granted to each invention. Otherwise due to the double patenting prohibition of 35 U.S.C. 121, multiple patents would be granted on a single invention. The proposed changes make it clear that a requirement for restriction is proper only when two or more patentably different inventions are claimed in one application.

The practice under present §§ 1.141 and 1.146 of limiting an application to five species, even though a generic claim has been allowed, has caused some problems since 1953 when the present language of section 121 of the patent statute became effective. Section 121 prohibits the use of a patent as a reference in a subsequent divisional application filed as the result of a requirement for restriction in the application on which such a patent is based. Present §§ 1.141 and 1.146 indicate that an application may be limited to five species even though an allowable generic claim appears therein. If an application is so limited to five species, the other species can be specifically protected only if refiled in a divisional application. Such applications may be filed even though the species are not patentably different from each other. Since the first patent cannot be used as a reference against the second application, limiting the number of species in the first patent would result in a second patent issuing on species which are not patentably different from the species in the first patent. The proposed changes would avoid this problem by removing from the rules the language limiting the claims in one application to five species.

The Markush-type claim practice which allows enumeration in a claim of a plurality of alternatively usable substances or members, has been sanctioned to permit the inclusion of such members in a claim when a generic term covering them is not available. Over the years, this form of claim has been used, for example, in claiming compounds having a large variety of substituent groups, and as a result, Markush-type claims are presented which are each directed to a plurality of independent and distinct inventions.

More than one invention is present in a Markush-type claim if the alternatively usable members of the Markush group are so unrelated and diverse that a prior art reference which shows one of the members and otherwise anticipates the claim could not ordinarily be used to reject under 35 U.S.C. 103 a claim reciting another of the members. In such circumstances, the claim is considered to be an improper Markush-type claim and not a generic claim. Such a claim imposes an undue burden on the Patent Office, particularly with respect to the search which would have to be made for proper examination.

The proposed changes expressly sanctioned the withdrawal of improper Markush-type claims. It should be noted that the "withdrawal" of such improper Markush-type claims would provide the applicant with the benefits of the double patenting prohibition of 35 U.S.C. 121. This benefit would not be available if such improper Markush-type claims were rejected.

The proposed changes will permit examiners to expedite prosecution and make more meaningful searches to determine whether the disclosed and claimed inventions are novel and patentable.

The text of the proposed revised rules is as follows:

§ 1.141 *Different inventions in one application.*

An application claiming two or more independent and distinct, patentably different inventions may be required to be restricted to one of the inventions. Inventions are patentably different when one is not obvious in view of the other, and they may properly appear in separate patents.

§ 1.142 *Requirement for restriction between inventions.*

(a) If two or more independent and distinct, patentably different inventions are claimed in a single application and the examiner deems that restriction is appropriate, he may require the applicant to elect for prosecution in the application a single invention, to which his claims shall be restricted. Such a requirement may be made at any time before final action in the case, at the discretion of the examiner.

(b) In an application containing a claim which enumerates alternatively usable substances or members which are so unrelated that the claim is, in fact, directed to independent and distinct, patentably different inventions, the examiner may require the applicant to elect the invention to which his claims shall be restricted. After election by applicant, such an improper claim by enumeration may be withdrawn by the examiner from further examination because more than one invention is being claimed (35 U.S.C. 121).

(c) Claims not restricted to the elected invention, if not canceled, are nevertheless withdrawn from further consideration by the examiner by the election, subject, however, to reinstatement in the event the requirement for restriction is withdrawn or overruled pursuant to a petition under § 1.144.

§ 1.144 *Petition from requirement for restriction.*

Within 2 months after the examiner's adverse reply to a request for reconsideration of a requirement for restriction,

the applicant may petition the Commissioner to review the requirement. A petition will not be considered if reconsideration of the requirement was not requested. (See § 1.181.)

§ 1.145 *Subsequent presentation of claims for different invention.*

If, after an examiner's action on an application, the applicant presents a claim or claims therein directed to a patentably different invention, distinct from and independent of the invention previously claimed, the examiner may require the applicant to restrict the claims to the invention previously claimed if the amendment is entered, subject to reconsideration and review as provided in §§ 1.143 and 1.144.

§ 1.146 *Election of species.*

In an application containing a generic claim and claims directed to a plurality of independent and distinct, patentably different species embraced thereby, the examiner may require the applicant to elect that species of his invention to which his claims shall be restricted if no generic claim is finally held allowable. If a generic claim is later found allowable, the application may also contain claims to species in addition to the one elected, provided that such additional species claims are either written to be dependent from a generic claim (§ 1.75 (c)) or to otherwise include all the limitations of the generic claim.

RICHARD A. WAHL,
Acting Commissioner of Patents.

Approved: October 13, 1972.

RICHARD O. SIMPSON,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 72-17925 Filed 10-19-72; 8:47 am]

Pub. in 37 F.R. 22625, Oct. 20, 1972

[905 O.G. 254]

(Pending—No Final Action Taken)

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(142) CHANGE OF INVENTORS

Where a person is added or removed as an inventor during the prosecution of an application before the Patent Office, problems may occur upon claiming U.S. priority in a foreign filed case. One such problem results from the apparent conflict between the inventor(s) named in the foreign application and the inventor(s) shown on the priority papers obtained from the U.S. Patent Office. Another problem may occur where there is no conflict between the inventors in the foreign application as filed and the priority papers but a change of inventors has been made in the U.S. application and a similar change is to be made in the foreign application.

In order to overcome the possibility of these problems arising in the future, Examiners should acknowledge any addition of inventors made in accordance with the practice under Rule 45 including the following statement in the next communication to the applicant or his attorney:

"In view of the papers filed _____, it has been found that this application, as filed, through error and without any deceptive intention, failed to include _____ as an actual joint inventor and accordingly, this application has been corrected to include him in accordance with Rule 45."

A similar statement, appropriately modified, should be made in the case where an inventor is removed from those included in the application as filed.

RICHARD A. WAHL,
June 10, 1968. *Assistant Commissioner.*

[852 O.G. 509]

TIME FOR RESPONSE

(143) EXTENSION OF TIME

It is ordinarily desirable that notice of the action taken by the Patent Office on requests for extension of time be communicated to the persons making the requests as soon as is reasonably possible. In order to improve Patent Office service to patent and trademark applicants in this regard, the following procedure is being instituted effective immediately. If a request for extension of time is filed in duplicate and accompanied by a stamped return-addressed envelope, the Office will indicate the action taken on the duplicate and return it promptly in the envelope. Utilization of this procedure is optional on the part of applicant.

EDWARD J. BRENNER,
Aug. 3, 1966. *Commissioner of Patents.*

[829 O.G. 1307]

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(144) EXTENSIONS OF TIME

Effective immediately, a new liberal policy for interpretation and application of Rule 136(b) will apply with respect to first requests for a one-month extension of time for reply to Office actions where a shortened statutory period for response has been set. Any request under Rule 136(b) for extension of time must state a reason in support thereof; under the above policy the application of the rule will entail only a limited evaluation of the stated reason.

This liberality will not apply to (1) any requests for more than a one-month extension, and (2) second and subsequent requests for extension of time.

In order to provide prompt notification of the action taken on extension requests, the request may be filed in duplicate, accompanied by a stamped return-addressed envelope (including a ZIP code), as announced in the OFFICIAL GAZETTE of, August 3, 1966, 829 O.G. 1307).

It is expected that requests for extension of time will continue to be made only when a need exists and will not become a standard operating procedure. Routine use of this practice may necessitate abandoning the new policy and a return to a less liberal interpretation of Rule 136(b).

RICHARD A. WAHL,
Jan. 26, 1967. *Assistant Commissioner.*

[835 O.G. 716]

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(145) FINAL REJECTION—TIME FOR RESPONSE

Effective Sept. 1, 1967, the filing of a timely response to a final rejection having a shortened statutory period for response will operate to extend the period for appeal or filing of a continuing case an additional month, but in no case to exceed six months from the date of the final action.

An object of this practice is to obviate the necessity for appeal or filing a continuing case merely to gain time to consider the Examiner's position in reply to an amendment timely filed after final rejection.

Present practice relating to the treatment of amendments after final rejection will continue to apply and failure to file a response during the three-month period will, as heretofore, result in abandonment of the application. In any case where this one-month extension applies and an amendment is officially received during this additional month, the amendment will not be entered or responded to unless it *prima facie* places the application in condition for allowance (e.g. cancels all rejected claims, fully complies with all Examiner suggestions, requirements, etc.).

Also, during this additional month no applicant- or attorney-initiated interview will be permitted.

EDWARD J. BRENNER,
Aug. 7, 1967. *Commissioner.*

[841 O.G. 1411]

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(146) FINAL REJECTION—TIME FOR RESPONSE

In clarification of the Notice of August 7, 1967, published in the OFFICIAL GAZETTE of August 29, 1967 (841 O.G. 1411), the filing of a timely response after a final rejection is construed as including a request for a one month extension of the shortened statutory period.

If the response is complete but fails to place the application in condition for allowance, the request will be granted. The entry of any further amendments filed during the additional month shall be restricted to those which *prima facie* place the application in condition for allowance.

RICHARD A. WAHL,
Sept. 26, 1968. *Assistant Commissioner.*

[855 O.G. 1109]

(147) OFFICE ACTIONS—TIMELY RESPONSE

The Patent Office has been receiving an excessively large volume of petitions to revive based primarily on the late filing of amendments and other responses to official actions. Many of these petitions indicate that the late filing was due to unusual mail delays; however, the records generally show that the filing was only two or three days late.

In order to alleviate, for applicants and the Office, the problems and expenditures of time and effort occasioned by abandonments and petitions to revive, it is suggested that responses to official action be mailed to the Patent Office at least one, and preferably two, week(s) prior to the expiration of the period within which a response is required. This suggestion is made in the interest of improving efficiency, thereby providing better service to the public.

WILLIAM FELDMAN,
Aug. 25, 1972. *Deputy Assistant Commissioner for Patent Examining.*

[902 O.G. 1172]

APPEALS

(148) APPEAL BRIEFS

It appears that many appeal briefs are being filed which omit reference to the drawing in describing the appellant's invention. As a reminder that the Board of Appeals is aided in its consideration if such a reference appears, attention is directed to the following language in the first sentence of Rule 192(a):

". . . including a concise explanation of the invention which should refer to the drawing by reference characters . . ."

EDWIN L. REYNOLDS,
Aug. 3, 1965. *First Assistant Commissioner.*

[817 O.G. 1241]

(149) APPEAL BRIEFS

While Rule 192(a) requires two extra copies of appeal briefs only if an oral hearing is requested, such copies are of substantial assistance to the Board when appeals are submitted on brief and it is desirable that they be supplied in such cases also. All claims reproduced in appeal briefs should be double spaced.

EDWIN L. REYNOLDS,
Jan. 24, 1966. *First Assistant Commissioner.*

[823 O.G. 411]

(150) PRACTICE RE: WITHDRAWAL OF FINAL REJECTION BY THE EXAMINER AFTER NOTICE OF APPEAL TO THE BOARD OF APPEALS

Where Notice of Appeal to the Board of Appeals has been filed and the Examiner withdraws the final rejection for allowance or further rejection, applicants are reminded that this results in automatic removal of the appeal from the records of the Board of Appeals in that application.

Accordingly, a proper response to a subsequent final rejection requires the filing of a new Notice of Appeal [without fee] and if this appeal is carried forward, the appropriate fee on filing a brief in support of the second appeal is required.

EDWIN L. REYNOLDS,
Mar. 29, 1967. *First Assistant Commissioner.*

[837 O.G. 667]

(151) RULE 192—FILING OF APPEAL BRIEF

Attention is directed to the fact that the seasonable filing of an appeal brief is determined by Rule 192, irrespective of whether the applicant or his attorney has received the appeal acknowledgment with its *reminder* of the brief's due date.

The above should be reflected in any docketing system for filing appeal briefs.

EDWIN L. REYNOLDS,
Aug. 4, 1967. *First Assistant Commissioner.*

[841 O.G. 1412]

(152) ORAL HEARINGS UNDER RULE 194

Effective September 1, 1968, for a trial period of six months, new procedures will be initiated which will permit Primary Examiners to present an oral argument before the Board of Appeals in appeals where the applicant has been granted an oral hearing.

After the attorney or agent representing the appellant has made his presentation, the Examiner will be allowed fifteen minutes to reply as well as to present a statement which clearly sets forth his position with respect to the issues and rejections of record. Appellant may utilize any allotted time not used in the initial presentation for rebuttal.

RICHARD A. WAHL,
July 26, 1968. *Assistant Commissioner.*

Concur:
EDWIN L. REYNOLDS,
First Assistant Commissioner.

[855 O.G. 827]

(153) APPEAL HEARINGS

The practice of permitting oral arguments by Primary Examiners in appeals, announced for a trial period in the OFFICIAL GAZETTE of Oct. 22, 1968 (855 O.G. 827), is hereby made permanent.

RICHARD A. WAHL,
Mar. 27, 1969. *Assistant Commissioner.*

Concur:
E. L. REYNOLDS,
First Assistant Commissioner.

[861 O.G. 1011]

(154) ABANDONMENT OF APPLICATIONS BEFORE BOARD OF APPEALS

There have been recent instances of the Board of Appeals rendering a decision in an application which had already been refiled as a streamlined continuation.

To avoid recurrence of this situation, applicants should promptly inform the Clerk of the Board in writing as soon as they have positively decided to refile or to abandon an application containing an appeal awaiting a decision. Failure to exercise appropriate diligence in this matter may result in the Board's refusing an otherwise proper request to vacate their decision.

EDWIN L. REYNOLDS,
First Assistant Commissioner.

[857 O.G. 1005 (Dec. 24, 1968)]

(155) REPLY BRIEFS

Applicants should clearly and specifically indicate in their reply briefs the new points of argument "raised in the examiner's answer" to which said reply briefs are directed. Rule 193(b) does not permit general rebuttal of each statement made in the examiner's answer; Consequently a reply brief which is not restricted to answering "new points" may be refused consideration in toto.

EDWIN L. REYNOLDS,
Apr. 15, 1969. *First Assistant Commissioner.*

[862 O.G. 343]

(156) APPEALS—CONFIDENTIAL MEMORANDA

The practice of presenting confidential memoranda to the Board of Appeals is hereby terminated. All correspondence with the Board of Appeals, whether by the Examiner or the applicant will be on the record. No unpublished decisions which are unavailable to the general public by reason of 35 U.S.C. 122 will be cited by the Examiner or the applicant except that either the Examiner or the applicant has the

right to cite an unpublished decision in an application having common ownership with the application on appeal.

WILLIAM E. SCHUYLER, JR.,
July 28, 1970. *Commissioner of Patents.*

[877 O.G. 733]

(157) APPEAL BRIEFS UNDER RULES 192 AND 193(b)

Appellants are reminded that their briefs in appealed cases must be responsive to every ground of rejection stated by the examiner, including new grounds stated in his answer.

Where an appellant fails to respond by way of brief or reply brief to any ground of rejection, and it appears that the failure is inadvertent, appellant shall be notified that he is allowed one month to correct the defect by filing a supplemental brief. Where this procedure has not been followed, the Board of Appeals should remand the application to the examiner for compliance. When the record clearly indicates intentional failure to respond by brief to any ground of rejection, for example, by failure to file a supplemental brief within the one-month period allowed for that purpose, the examiner should inform the Board of Appeals of this fact in his answer and merely specify the claims affected.

Where the failure to respond by brief appears to be intentional, the Board of Appeals may dismiss the appeal as to the claims involved. Oral argument at a hearing will not remedy such deficiency of a brief.

This notice supersedes the notices of May 4, 1966, 826 O.G. 1060, and of Oct. 20, 1966, 833 O.G. 1.

WILLIAM E. SCHUYLER, JR.,
Apr. 26, 1971. *Commissioner of Patents.*

[886 O.G. 424]

(158) EXAMINER TESTIMONY

As stated in Section 1701 of the Manual of Patent Examining Procedure, patent examiners are forbidden to testify as patent experts or to express opinions, in testimony or otherwise, as to the invalidity of any issued patent. Patent examiners have, in connection with litigation involving patent validity, been called to testify on factual matters. In those cases, the practice has been to permit the examiner to testify only upon the issuance of a subpoena.

Henceforth, patent examiners will be permitted to testify on deposition in patent suits, without the need for a subpoena, provided the following conditions are satisfied:

1. The party proposing to take the testimony will state in writing, that the questions to be asked of the examiner will be phrased to comply with the permissible scope of inquiry as outlined in the protective orders contained in the Court opinions in *In re Mayewsky*, 162 USPQ 86, 89 and *Shaffer Tool Works* v. *Joy Manufacturing Co.*, 167 USPQ 170, 171: " . . . the scope of the oral depositions of the patent examiners is hereby limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the patent examiners in acting upon the patent applications maturing into the patent [in suit]." 167 USPQ 171.
2. That in addition to complying with the requirements of Rule 30 of the Federal Rules of Civil Procedure, the party taking the testimony will agree to give notice of the taking of the deposition of the patent examiner to the Solicitor, at least thirty days prior to the date on which the taking of the deposition is desired.
3. That the party taking the deposition arrange with the Solicitor to notice the deposition at a place convenient to the Patent Office.

If the party desiring to take the testimony of the examiner does not agree to the conditions enumerated, the Patent Office will not permit the examiner to be deposed without a subpoena and compliance with the precedure set forth in Section 7.02, Department of Commerce Administrative Order 205–12, June 29, 1967 as amended April 10, 1970. That section states:

> In any case where it is sought by subpoena, order or other compulsory process or other demand of a court or other authority (hereinafter referred to as a "demand") to require the production or disclosure of any record in the files of the Department of Commerce or other information acquired by an officer or employee of the Department as a part of the performance of his official duties or because of his official status, the matter shall be immediately referred for determination to the appropriate official described in subsection 4.01 of this order. If such official has discretion with respect to disclosure and he determines that it would be improper to comply with the demand, or if he has no discretion with respect to disclosure, the matter shall be promptly referred to the Secretary of Commerce for final determination. Unless and until the Secretary determines that the records or information should be produced, the officer or employee who appears in answer to the demand shall inform the court or other authority (*a*) that the section 7 of this order prohibits the officer or employee from producing or disclosing the records or other information demanded without the prior approval of the Secretary of Commerce, and (*b*) that the demand has been, or is being, as the case may be, referred for the prompt consideration of the Secretary. The officer or employee shall also provide the court or other authority with a copy of the regulations prescribed in this section 7 of this order, and shall respectfully request the court or other authority to stay the demand pending the receipt of instructions or directions from the Secretary of Commerce concerning the demand.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. 762]

(159) SERVICE OF COURT PAPERS ON COMMISSIONER OF PATENTS

Those having occasion to serve on the Commissioner of Patents papers having to do with court proceedings are hereby reminded that proper service by mail may be effected only by mailing the papers to the Solicitor of the Patent Office as counsel for the Commissioner. Rule 5(b) of the Federal Rules of Civil Procedure provides in pertinent part:

> Whenever under these rules service is required or permitted to be made upon a party represented by an attorney the service shall be made upon the attorney unless service upon the party himself is ordered by the court. Service upon the attorney * * * shall be made by delivering a copy to him or by mailing it to him at his last known address * * *.

Rule 25(b) of the Federal Rules of Appellate Procedure similarly provides, "Service on a party represented by counsel shall be made on counsel." The clerk of the U.S. Court of Customs and Patent Appeals has stated that, inasmuch as the rules of the Court are not specific on the manner of service in patent cases, the procedure outlined herein has the Court's approval.

Accordingly, all service copies of papers filed in court proceedings in which the Commissioner of Patents is a party which are served by mail should be addressed:

> "(Name of Solicitor), Solicitor
> U.S. Patent Office
> Washington, D.C. 20231."

S. WM. COCHRAN,
Apr. 28, 1972. *Solicitor.*

[898 O.G. 1500]

INTERFERENCES

(160) INTERFERENCE—DECLARATION

Effective July 1, 1964, no interference will be declared between pending applications, if there is a difference of more than three (3) months in the effective filing dates of the applications in the case of inventions of a simple character, or a difference of more than six (6) months in other cases, except in exceptional situations, as determined and approved by the Commissioner.

EDWARD J. BRENNER,
June 26, 1964. *Commissioner.*

[804 O.G. 297]

(161) INTERFERENCE PRACTICE—AFFIDAVITS UNDER RULE 204(c)

There has been difficulty in a number of cases due to uncertainty on the part of applicants concerning the requirements of affidavits to be filed under Rule 204(c) to secure interference contests with patentees whose filing dates antedate their own by more than three months, and it is hoped that the following explanation will be helpful.

In preparing affidavits under this rule applicants should have in mind the provisions of Rule 228, and especially the following facts:

1. That after these affidavits are forwarded by the Primary Examiner for the declaration of an interference they will be examined by a Board of Patent Interferences.

2. If the affidavits fail to establish with adequate corroboration acts and circumstances which would prima facie entitle applicant to an award of priority relative to the effective filing date of the patentee, an order will be issued concurrently with the notice of interference, requiring applicant to show cause why summary judgment should not be rendered against him.

3. Additional affidavits in response to such order will not be considered unless justified by a showing under the provisions of Rule 228, and if the applicant responds the patentee will receive from the applicant a copy of the response (Rule 247) and from the Patent Office a copy of the original showing (Rule 228), and will be entitled to present his views with respect thereto.

4. It is the position of the Board of Patent Interferences that all affidavits submitted must describe acts which the affiants performed or observed or circumstances observed, such as structure used and results of use or test, except on a proper showing as provided in Rule 204(c). Statements of conclusion, for example, that the invention of the counts was reduced to practice, are generally considered to be not acceptable. It should also be kept in mind that documentary exhibits are not self-proving and require explanation by an affiant having direct knowledge of the matters involved. However, it is not necessary that the exact date of conception or reduction to practice be revealed in the affidavits or exhibits if the affidavits aver observation of the necessary acts and facts, including documentation when available, before the patentee's effective filing date. On the other hand, where reliance is placed upon diligence, the affidavits and documentation should be precise as to dates from a date just prior to patentee's effective filing date. The showing should relate to the essential factors in the determination of the question of priority of invention as set out in 35 U.S.C. 102(g).

5. The explanation required by Rule 204(c) should be in the nature of a brief or explanatory remarks accompanying an amendment, and should set forth the manner in which the requirements of the counts are satisfied and how the requirements for conception, reduction to practice or diligence are met.

GEORGE W. BOYS,
Apr. 21, 1966. *Chairman, Board of Patent Interferences.*

[826 O.G. 712]

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(162) DESIGNATION OF INTERFERENCE RECORD RELIED UPON

During the taking of testimony in an interference it is frequently not clear just what testimony is necessary to a party's case, since the contentions to be made by the opposing party are not known, and in the case of a junior party it is frequently not known whether or not the senior party will take testimony. Therefore counsel taking testimony will normally cover all matters which might possibly have an effect on his case. Then, in preparing his briefs it may become apparent that certain portions of his record have no real significance as to issues involved. A review of these portions by the Board of Patent Interferences is thus unnecessary.

Accordingly, in order to reduce the time required by the Board of Patent Interferences to study the record, and to more effectively and efficiently decide the issues involved, counsel relying on an evidentiary record in interference cases are requested to file a statement as to the portions of their record upon which they rely. Such statement should be included in the briefs of the respective parties.

EDWIN L. REYNOLDS,
First Assistant Commissioner.

[846 O.G. 679 (Jan. 16, 1968)]

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(163) RULE 283

Testimony taken in another interference or action

A discovery proceeding under the control of a U.S. District Court, ancillary to an interference proceeding, is now considered to be an "action" within the meaning of Rule 283. Accordingly, "pretrial depositions" taken in a discovery proceeding in accordance with the Federal Rules of Civil Procedure and under court control may be used in the interference as to which the discovery proceeding is ancillary, subject to all other provisions of Rule 283.

RICHARD A. WAHL,
May 2, 1972. *Assistant Commissioner.*

[898 O.G. 1500]

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(164) INTERFERENCE RECORD

It has come to the attention of the Patent Office that some practitioners have misinterpreted Rule 253 as requiring that a set of copies of documentary exhibits be submitted as a part of each copy of the record (a total of four sets). To clarify the intent of the rule in this respect, it should be noted that paragraph (c) of Rule 253 requires only that each copy of the record contain the following:

The testimony presented by the party concerned;
A copy of the counts of the interference;
A copy of the preliminary statement of the party concerned; and
An index of exhibits.

Only one set of exhibits need be submitted.

GEORGE W. BOYS,
July 11, 1974. *Chairman, Board of Patent Interferences.*

[925 O.G. 1]

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(165) ACCESS TO INTERFERENCE FILES

[37 CFR Part 1]

Notice of Proposed Rulemaking

Notice is hereby given that, pursuant to authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), as amended October 5, 1971 (85 Stat. 364), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising § 1.11(a).

Interested persons are invited to present their views, objections, recommendations, or suggestions in writing in connection with the proposed change to the Commissioner of Patents, Washington, D.C. 20231 on or before November 29, 1974. No oral hearings will be held. Written comments or suggestions will be available for examination by interested persons at Crystal Plaza Building 3, Room 11C17a, Arlington, Virginia.

The proposed revision of § 1.11(a) would change present practice by permitting earlier access to the file of an interference which involved a patent or an application on which a patent has issued. Under present practice, access is not permitted until judicial review of the decision of the Board of Patent Interferences has been exhausted. The proposed revision would allow access to the file after final decision of the Board of Patent Interferences if that decision is an award of priority as to all parties. Such earlier access could be of benefit to members of the public who need to know the basis for the issuance of the patent prior to final adjudication of the interference decision.

The text of the proposed revised rule is as follows:

§ 1.11 *Files open to the public.*

(a) After a patent has been issued, the specification, drawings, and all papers relating to the case in the file of the patent are open to inspection by the general public, and copies

may be furnished upon paying the fee therefor. After an award of priority by the Board of Patent Interferences as to all parties, the file of any interference which involved a patent, or an application on which a patent has issued, is similarly open to public inspection and procurement of copies. See § 2.27 of this chapter for trademark files.

* * * * *

Dated: Aug. 30, 1974.

C. MARSHALL DANN,
Commissioner of Patents.

Approved: Sept. 9, 1974.

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 74-21454; Filed 9-16-74; 8:45 am]

Pub. in 39 F.R. 33376, Sept. 17, 1974

[927 O.G. 779]

(Pending—No Final Action Taken)

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(166) INTERFERENCE PRACTICE

[37 CFR Part 1]

Proposed Clarification of Testimony Requirements

Notice is hereby given that, pursuant to authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; (35 U.S.C. 6)) as amended October 5, 1971 (Pub. L. 92-132, 85 Stat. 364), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.125, 1.231(c), 1.247(c), 1.251(a)(b)(c), 1.253, and 1.277(b).

Interested persons are invited to present their views, objections, recommendations or suggestions in connection with the proposed amendment in writing to the Commissioner of Patents, Washington, D.C. 20231, on or before November 15, 1974. No oral hearings will be held. Written comments or suggestions will be available for examination by interested persons at Crystal Plaza Building 3, Room 11C17a, 2021 Jefferson Davis Highway, Arlington, Virginia.

The proposed rule change is intended to clarify interference practice relating to taking and filing of testimony.

The sections, if amended as proposed, would read as follows:

§ 1.225 *Failure of junior party to file statements or to overcome filing date of senior party.*

If a junior party to an interference fails to file a preliminary statement, or if his statement fails to overcome the effective filing date of the application of another party, judgment on the record will be entered against such junior party unless he has filed a proper motion under § 1.231, within the time set for such motions, seeking some action in the interference. If such motion has been timely filed but does not result in action in the interference which removes the basis for a judgment on the record, such judgment will be entered unless the motion related to a matter which may be reviewed at final hearing under § 1.258, and within 30 days of the decision denying his motion, or a later time set by the patent interference examiner, the junior party concerned requests that final hearing be set to review such matter. Also, such a junior party may within such 30 day period, or time set, request a final hearing to review such a matter raised by his opposition to a motion under § 1.231(a)(2), (3), (4), or (5) which was granted over his opposition. Such a junior party will not be permitted to take testimony except on granting of a motion accompanied by a showing of good cause, which should normally include names of proposed witnesses and affidavits or declarations by them giving their expected testimony.

§ 1.231 *Motions before the primary examiner.*

* * * * *

(c) A motion to amend under subparagraph (a)(2), or to substitute another application or declare an additional interference under subparagraph (a)(3) must be accompanied by an amendment adding the proposed counts to the application concerned if such claims are not already in that application. The motion must also request the benefit of a prior application as provided for under subparagraph (a)(4) if the party concerned expects to be accorded such benefit.

* * * * *

§ 1.247 *Service of papers.*

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(c) Certified transcripts of testimony under § 1.276 (but copies of the testimony must be served (§ 1.253(a)).

* * * * *

§ 1.251 *Assignment of times for discovery and taking testimony.*

(a) Subject to the exception provided in paragraph (c) of this section, a period for preparation for testimony will be set in which all parties should complete discovery and other preparatory activities, except for service by the senior party required by § 1.287(a)(1) which is governed by § 1.287(a)(2)(iii).

(b) Subject to the exception provided in paragraph (c) of this section, times will be assigned in which the junior party shall complete his testimony in chief, and in which the other party shall complete the testimony on his side, and a further time in which the junior party may take rebutting testimony, but he shall take no other testimony. If there be more than two parties to the interference, the times for taking testimony will be so arranged that each shall have an opportunity to prove his case against prior parties and to rebut their evidence, and also to meet the evidence of junior parties. If a senior party fails to file a preliminary statement, or expressly elects to rely solely on his effective filing date, he will be assigned only a time for taking rebuttal testimony, and no junior party will be assigned a time for taking rebuttal testimony unless another junior party senior to him is assigned a time for taking testimony in chief.

(c) Times for preparation of testimony for compliance with § 1.287(a) and for taking of testimony will ordinarily be assigned in notices sent to the parties after motions under § 1.231 have been disposed of or, if no such motions have been filed, after the close of the motion period (§ 1.231). Such times will not normally be assigned for a junior party who fails to file a preliminary statement or whose preliminary statement fails to overcome the prima facie case made by the effective filing date of the senior party. (See § 1.325.)

* * * * *

§ 1.253 *Copies of the testimony.*

(a) In addition to the certified transcript of the testimony (§§ 1.275 to 1.278) or executed copies of affidavits of stipulated testimony or facts (§ 1.272), and the exhibits, three true copies of the testimony of each party must be filed for the use of the Patent Office (a total of four copies), and one true copy must be served upon each of the opposing parties. Only one set of exhibits need be filed in the Patent Office.

(b) These copies of the testimony may be submitted either in printed or in typewritten form.

(c) These copies, whether printed or typewritten, must include the testimony presented by the party filing the same, a copy of the counts of the interference, the preliminary statement required by §§ 1.215 to 1.227, an index of the names of the witnesses, giving the pages where their examination and cross-examination begin, and an index of the exhibits, briefly describing their nature and giving the pages at which they are introduced and offered in evidence. The pages must be serially numbered throughout the entire record and the names of the witnesses must appear at the top of the pages over their testimony.

(d) The copies of the testimony for all parties must be filed and served on the opposing parties by the date specified in the order setting times for taking testimony or such extensions as may be granted.

(e) When the copies of the testimony are submitted in printed form, they shall be printed in 11-point type and adequately leaded; the paper must be opaque and unglazed; the size of the page shall be 7¾ by 10¼ inches (19.4 by 26 cm.); the size of the printed matter shall be 4⅛ by 7⅛ inches (10.6 by 18.2 cm.); and they shall be bound to lie flat when opened.

Twenty-five additional copies for the United States Court of Customs and Patent Appeals, should appeal be taken, may also be filed; if no such appeal be taken, the twenty-five copies will be returned to the party filing them.

(*f*) When the copies of the testimony are submitted in typewritten form, they must be clearly legible on opaque, unglazed, durable paper approximately 8½ by 11 inches (21.6 by 27.9 cm.) in size (letter size) and one of the three copies must be a ribbon copy, but need not be executed by the certifying officer. (The certified transcript may be a properly executed carbon copy. See § 1.277.) The typing shall be on one side of the paper, in not smaller than pica-type; and double-spaced with a margin of 1½ inches (3.8 cm.) on the left-hand side of the page. The sheets shall be bound at their left edges, in such manner to lie flat when opened, in a volume or volumes of convenient size (approximately 100 pages per volume is suggested) provided with covers. Documentary exhibits should not be included in bound volumes of testimony. Multigraphed or otherwise reproduced copies conforming to the standards specified will be accepted.

(*g*) The testimony of any party failing to supply copies thereof as specified may be refused consideration.

§ 1.277 *Form of deposition.*

* * * * *

(*b*) In order to have a ribbon copy of the testimony available as required by § 1.253(f), a carbon copy of the deposition may be executed by the witnesses and the officer and filed as required by § 1.276.

* * * * *

Dated: July 26, 1974.

C. MARSHAL DANN,
Commissioner of Patents.

Approved:
BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 74-19385; Filed 8-21-74; 8:45 am]

[926 O.G. 1132]

(Pending—No Final Action Taken)

CORRECTION OF ERRORS

(167) CERTIFICATES OF CORRECTION LISTING

Certificates of Correction are issued every Tuesday. Beginning on January 7, 1969, each issue of the OFFICIAL GAZETTE will numerically list all U.S. patents having Certificates of Correction issuing that Tuesday. The list will appear under the heading "Certificates of Correction Issued (date)."

RICHARD A. WAHL,
Nov. 22, 1968. *Assistant Commissioner.*

[857 O.G. 1005]

(168) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

Issuance of Certificates of Correction

On October 11, 1968, notice of proposed rulemaking regarding the amendment of §§ 1.322 and 1.323 of Title 37, Code of Federal Regulations, dealing with the issuance of certificates of correction, was published in the Federal Register (33 F.R. 15218). Interested persons were given 40 days in which to submit written comments, suggestions, or objections regarding the proposed amendments.

Full consideration having been given to all comments that were received in response to the public notice, the amendments originally proposed are hereby adopted without change and are set forth below.

As a result of these rule changes it will no longer be necessary for the patentee to forward his patent to the Patent Office when requesting the issuance of a certificate of correction. Upon receipt of an appropriate request, a certificate of correction will be issued and forwarded to the patentee, with an authorization permitting the patentee to physically attach same to the patent.

In connection with this change of procedure, arrangements have been made with Shepard's Citations to indicate under its listing of patents in its set entitled "Shepard's United States Citations, Patents and Trademarks" those patents for which certificates of correction have been issued. Beginning in April of this year the information will be published in that set's quarterly cumulative supplement and will appear in the bound volume thereof, when it is released.

Effective date. These amendments shall become effective upon publication in the Federal Register.

Dated: Mar. 18, 1969.

EDWARD J. BRENNER,
Commissioner of Patents.

Approved:
ALLEN V. ASTIN,
Assistant Secretary for Science and Technology.

* * * * *

[861 O.G. 680]

(169) NEW PROCEDURE FOR HANDLING CERTIFICATES OF CORRECTION

In compliance with amended Rules 322 and 323, and to expedite the issuance of certificates and reduce printing costs, practitioners are urged to submit the text of the certificate on a special form which could serve as the final copy for use in direct process reproduction (offset printing) of the certificate of correction. The *request* for issuance of the certificate (together with the fee where the error is due to applicant's mistake) should be in a separate letter accompanied by two copies of the form and a self-addressed envelope.

Where the recommended format is used and approved, one copy of said form, duly certified, will be returned to the patentee for attachment to his copy of the patent. This will eliminate the present necessity for returning the patent when requesting a certificate. The other copy of the form will be used for direct offset printing of copies of the certificate which, as heretofore, will be attached to every printed copy of the patent subsequently sold or distributed.

Copies of the form are obtainable for reproduction purposes from Correspondence and Mail Branch and from the receptionist in Bldg. 3, Crystal Plaza. Below is a sample form illustrating a variety of corrections and the suggested manner of setting out the format. Particular attention is directed to:

a. Identification of the exact point of error by reference to column and line number of the printed patent.
b. Conservation of space on the form by *typing* single space, beginning two lines down from the printed message.
c. Starting the correction to each separate column as a sentence, and using semi-colons to separate corrections within said column, where possible.
d. Two inch space left blank at bottom for signature of attesting officer.
e. Use of quotation marks to enclose the exact subject matter to be deleted or corrected; use of double hyphens (--) to enclose subject matter to be added, except for formulas.
f. Where a formula is involved, setting out only that portion thereof which is to be corrected.

Where the recommended format is not used or where the nature of the subject matter is such that it is more expedient to print by the direct image offset technique, e.g., entire sheet(s) of drawing or page(s) of specification omitted, multiple pages of corrections, intricate chemical formulas, etc., Issue and Gazette Branch will prepare the certificate as here-

tofore. Patentee will receive a copy for attachment to his copy of the patent.

RICHARD A. WAHL,
Apr. 1, 1969. *Assistant Commissioner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,667,999 Dated April 1, 1969

James W. Worth

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the drawings, Sheet 3, Fig. 3, the reference numeral 225 should be applied to the plate element attached to the support member 207. Column 1, lines 45 to 49, the left-hand formula should appear as follows:

Column 8, formula XXXV, that portion of the formula reading

should read

Formula XXXVII, that portion of the formula reading "-CH_2CH-" should read -- -CH_2CH_2- --. Column 2, line 68 and column 3, lines 3, 8 and 13, " " the claim reference numeral "2", each occurrence, should read -- 1 --. Column 10, line 16, cancel beginning with "12. A sensor device" to and including "tive strips." in column 11, line 8, and insert the following claim:

12. A control circuit of the character set forth in claim 1 and for an automobile having a convertible top, and including; means for moving said top between raised and lowered retracted positions; and control means responsive to said sensor relay for energizing the top moving means for moving said top from retracted position to raised position.

[862 O.G. 2]

ABSTRACTS

(170) EXAMINATION REQUIREMENTS AND PROCEDURE IN RELATION TO ABSTRACTS OF THE DISCLOSURE

The newly adopted amendment to Rule 72 which requires the submission of an *Abstract of the Disclosure* is being applied to patent applications which receive a first Office action of any kind from the Examiner on or after November 1, 1966; however, on cases filed before January 1, 1967, abstracts will not be required where the application is passed to issue on the first action.

The Examiner in the first office action on and after November 1, 1966, should require the submission of a brief abstract of the technical disclosure in the specification, the abstract to appear immediately after the title of the invention and preceding the disclosure in a separate paragraph under the heading "Abstract of the Disclosure." The following form paragraph may be used to make the requirement:

"An abstract is required, see new Rule 72(b)."

Responses to such actions should be treated under Rule 111(b) practice like any other formal matter.

Upon passing the case to issue, the Examiner should see that the abstract is an adequate and clear statement of the contents of the disclosure and generally in line with the guidelines in the following paragraphs; the abstract shall be changed by Examiner's Amendment in those instances where deemed necessary.

1. The purpose of the abstract is to provide a non-legal technical statement of the contents of the disclosure. The abstract should be an objective condensation (rather than a description) of the disclosure, in clear and concise language. Statements as to the relative merits or value, or speculative applications of the invention should be omitted.

2. The abstract should be especially designed to serve as a searching-scanning tool for the scientist, engineer or researcher in the particular art, and therefore should serve to indicate whether there is a need for consulting the full specification for details.

3. The abstract should be as brief as the subject permits. A single paragraph of 50–100 words should be sufficient.

4. Especially in the chemical field, the abstract should include a statement of the utility of the subject matter of the disclosure, particularly that which is related to the invention.

5. The abstract should be separate and independent of the "Summary of the Invention." One of the purposes of the abstract is to determine quickly the nature and gist of the technical disclosure.

RICHARD A. WAHL,
Oct. 7, 1966. *Assistant Commissioner.*

[831 O.G. 1328]

(171) CHANGE IN CONTENT OF THE PATENTS SECTION OF THE OFFICIAL GAZETTE

In keeping with the Patent Office program to encourage the use of patents in the scientific, engineering and business communities, as well as the patent profession, a change in the content of the patents section of the OFFICIAL GAZETTE is being made.

Beginning with the first issue of the OFFICIAL GAZETTE in January 1968, a copy of the abstract of each patent where an abstract is available will appear, in lieu of the claim. This change in content is being made in order that patent information may be better utilized by the patent public.

In addition to the regular issue of the OFFICIAL GAZETTE an extract of the patents section, i.e., the descriptive matter relating to patents only, will be made available. The subscription rate for the patents section extract only for the first six months period beginning with the first issue in January 1968, will be twenty-seven dollars ($27.00) and one dollar and twenty-five cents ($1.25) for a single copy. The extract will be mailed under the direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed. The title of the extract will be "Official Gazette—Patent Abstracts Section."

It is to be noted that the Government Printing Office has determined that the subscription rate for the regular issue of the OFFICIAL GAZETTE will be increased to sixty-seven dollars ($67.00) for the subscription year beginning January 1968, and the price of individual copies will be increased to one and a half dollars ($1.50). The increased rate is not related to the new program.

EDWARD J. BRENNER,
Sept. 25, 1967. *Commissioner of Patents.*

[843 O.G. 747]

(172) PARAGRAPH REQUIREMENTS FOR ABSTRACTS

In view of some difficulties experienced in determining the extent of the abstracts, the Patent Office is supplementing the Notice of October 7, 1966 (831 O.G. 1328).

An abstract should usually be limited to a single paragraph, under the heading, "Abstract of the Disclosure" as stated in Rule 72(b) and MPEP 608.01(b).

In unusual circumstances where the application disclosure does not lend itself to a single paragraph abstract, a plural paragraph abstract may be acceptable. An example of these rare situations would be an application having claims to different statutory classes, it being recognized that an abstract of the disclosure should be written to include the advancement in the art.

To avoid errors in printing where a plural paragraph abstract is deemed necessary and appropriate, the complete abstract must be set off by suitable headings to indicate where the abstract begins and ends. Appropriate headings useable between the abstract and the subsequent description are to be found in the "Guidelines for Drafting a Model Patent Application Under the Revised Rules" (832 O.G. 5; MPEP 608.01(a)).

RICHARD A. WAHL,
Feb. 16, 1968. *Assistant Commissioner.*

[854 O.G. 287]

(173) PATENT ABSTRACTS

The provision in Rule 72(b) of the Rules of Practice in Patent Cases, relating to inclusion of a "brief abstract of the technical disclosure" in applications for patent, has now been in effect for two and one-half years.

Instructions regarding abstract preparation were published at 831 O.G. 1328, October 25, 1966, and at about the same time a pamphlet entitled "Guidelines for the Preparation of Patent Abstracts" was published and made available to personnel concerned with the preparation and review of abstracts of the type noted.

Abstracts are becoming more and more significant in the field of mechanized and computerized prior art retrieval. It is therefore important that they reach the optimum quality level at the earliest possible date.

During the past year abstracts, in a random sample of approximately 1000 allowed applications, were audited or reviewed for purposes of determining degree of compliance with the aforenoted instructions and guidelines. Steady improvement in the quality of the abstracts was noted in the course of the review. The review clearly indicated, however, a need for further improvement as well as a need for certain modifications and revisions in the earlier published guidelines. There also appeared to be a need for reemphasis of portions of the guidelines.

Accordingly, a revised set of guidelines consonant with the needs suggested by the audit have been promulgated, and are set forth below for use in the preparation and review of patent abstracts.

GUIDELINES FOR THE PREPARATION OF PATENT ABSTRACTS

Background

The Rules of Practice in Patent Cases require that each application for patent include an Abstract of the Disclosure, Rule 72(b).

The content of a patent abstract should be such as to enable the reader thereof, regardless of his degree of familiarity with patent documents, to ascertain quickly the character of the subject matter covered by the technical disclosure and should include that which is new in the art to which the invention pertains.

The abstract is not intended nor designed for use in interpreting the scope or meaning of the claims, Rule 72(b).

Content

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is *new* in the art to which the invention pertains.

If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure.

If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement.

In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or a use thereof.

If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following: (1) if a machine or apparatus, its organization and operation; (2) if an article, its method of making; (3) if a chemical compound, its identity and use; (4) if a mixture, its ingredients; (5) if a process, the steps. Extensive mechanical and design details of apparatus should not be given.

With regard particularly to chemical patents, for compounds or compositions, the general nature of the compound or composition should be given as well as the use thereof, e.g., "The compounds are of the class of alkyl benzene sulfonyl ureas, useful as oral anti-diabetics." Exemplification of a species could be illustrative of members of the class. For processes, the type reaction, reagents and process conditions should be stated, generally illustrated by a single example unless variations are necessary.

Language and Format

The abstract should be in narrative form and generally limited to a single paragraph within the range of 50 to 250 words. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should sufficiently describe the disclosure to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "This disclosure concerns," "The disclosure defined by this invention," "This disclosure describes," etc.

Responsibility

Preparation of the abstract is the responsibility of the applicant. Background knowledge of the art and an appreciation of the applicant's contribution to the art are most important in the preparation of the abstract. The review of the abstract, for compliance with these guidelines, with any necessary editing and revision on allowance of the application is the responsibility of the examiner.

Sample Abstracts

A heart valve with an annular valve body defining an orifice and having a plurality of struts forming a pair of cages on opposite sides of the orifice. A spherical closure member is captively held within the cages and is moved by blood flow between open and closed positions in check valve fashion. A slight leak or backflow is provided in the closed position by making the orifice slightly larger than the closure member. Blood flow is maximized in the open position of the valve by providing an inwardly convex contour on the orifice-defining surfaces of the body. An annular rib is formed in a channel around the periphery of the valve body to anchor a suture ring used to secure the valve within a heart.

A method for sealing, by application of heat, overlapping closure panels of a folding box made from paperboard having an extremely thin coating of moisture-proofing thermoplastic material on opposite surfaces. Heated air is directed at the surfaces to be bonded, the temperature of the air at the point of impact on the surfaces being above the char point of the board. The duration of application of heat is made so brief, by a corresponding high rate of advance of the boxes through the air stream, that the coating on the reverse side of the panels remains substantially non-tacky. The bond is formed immediately after heating within a period of time for any one surface point less than the total time of exposure to heated air of that point. Under such conditions the heat applied to soften the thermoplastic coating is dissipated after completion of the bond by absorption into the board acting as a heat sink without the need for cooling devices.

Amides are produced by reacting an ester of a carboxylic acid with an amine, using as catalyst an alkoxide of an alkali metal. The ester is first heated to at least 75° C. under a pressure of no more than 500 mm. of mercury to remove moisture and acid gases which would prevent the reaction, and then converted to an amide without heating to initiate the reaction.

RICHARD A. WAHL,
Apr. 23, 1969. *Assistant Commissioner.*

[862 O.G. 653]

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(174) DISCONTINUATION OF THE PUBLICATION "PATENT ABSTRACTS SECTION OF THE OFFICIAL GAZETTE"

Effective Mar. 31, 1970, the Patent Office will no longer print the publication "Patent Abstracts Section of the Official Gazette." Reasons for this decision are the desire to incur a saving in printing costs, the same information now appears in the OFFICIAL GAZETTE, and the number of subscribers no longer warrants a separate publication.

The Superintendent of Documents, U.S. Government Printing Office, will contact subscribers to the "Patent Abstracts" for appropriate action regarding their subscriptions.

CLARENCE A. KALK,
Acting Assistant Commissioner for Administration.
Feb. 9, 1970.

[872 O.G. 1]

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(175) CLAIMS VERSUS ABSTRACTS FOR PUBLICATION IN THE PATENT OFFICIAL GAZETTE

Abstracts have been required for all patent applications filed since January 1, 1967. Subsequent to the requirement

for abstracts, the Office began substituting abstracts for patent claims in the OFFICIAL GAZETTE. At the present time, abstracts are used exclusively in the OFFICIAL GAZETTE to describe the inventions for which patents issue each week.

Over the last several months, the Office has become increasingly aware of the disparity of views which exist regarding the merits of the publication of claims or abstracts in the OFFICIAL GAZETTE. The utilization of abstracts in the OFFICIAL GAZETTE was initially based on a desire to make that publication more useful to the non-patent community. However, it now appears that a significant portion of the patent community, especially in the chemical area, would prefer the publication of claims in the OFFICIAL GAZETTE as more useful than the publication of abstracts.

To assist the Office in resolving this issue, it is requested that interested parties submit their comments in writing prior to January 1, 1973. Such comments should be addressed to the Commissioner of Patents, Washington, D.C., 20231.

ROBERT GOTTSCHALK,
May 22, 1972. *Commissioner of Patents.*

[899 O.G. 820]

(176) RETURN TO PRINTING OF CLAIMS IN PATENT OFFICIAL GAZETTE

In the notice of May 22, 1972 (899 O.G. 820) interested parties were requested to submit written comments as to whether claims or abstracts should be printed in the Patent OFFICIAL GAZETTE. In view of the comments received, the Patent Office has decided to return to the pre-1968 practice of printing the broadest claim or claims, as selected by the examiner, in the Patent OFFICIAL GAZETTE. The printing of claims will begin with the October 1, 1974 issue of the Patent OFFICIAL GAZETTE. Abstracts will continue to be printed on patents.

C. MARSHALL DANN,
Commissioner of Patents.

[924 O.G. 752 (July 23, 1974)]

REFERENCES

(177) CITATION OF PUBLICATIONS AND FOREIGN PATENTS

Foreign Patents

In accordance with Rule 107, for each foreign patent cited, there should be indicated the number of sheets of drawing and pages of specification and also the sheet number(s) and page number(s) specifically relied upon if less than the entire disclosure is used. Because it is essential to conserve space in the Examiner's file of applications and to minimize the cost to applicant under the automatic supply of references cited, whenever the total number of sheets and pages in any foreign patent exceeds ten, the Examiner should keep the total relied on as near to ten as possible. Applicants who desire a copy of the complete foreign patent or of the portion not "relied on" must order it, not through the automatic supply system, but in the usual manner.

Publications

Publications such as German allowed applications and Netherlands printed specifications should be similarly handled. With other publications such as books, periodicals and catalogues, the specific pages relied upon should be cited. If the copy relied upon is located only in the Group making the action (there is no call number), the additional information, "Copy in Group —" should be given.

RICHARD A. WAHL,
Jan. 4, 1965. *Acting Superintendent, Patent Examining Corps.*

[811 O.G. 293]

(178) AUTOMATIC FURNISHING FREE COPIES OF CITED REFERENCES

Commencing November 1, 1965, one complete set of references cited by Examiners in Office Actions will be automatically supplied without charge simultaneously with the mailing of the actions.

Additional copies of references desired must be properly identified and purchased from the regular Patent Office copy supply facilities.

This supersedes the notice, "Providing Copies of Cited References to Applicants" which was published in 809 O.G. 317 on December 8, 1964.

C. A. KALK,
Oct. 1, 1965. *Director of Administration.*

[819 O.G. 1335]

(179) CITATION OF REFERENCE AT TIME OF ALLOWANCE

Commencing March 15, 1966, references cited by examiners when passing an application to issue will no longer be supplied under the automatic plan. Copies of these references, if desired, must be purchased from the regular Patent Office copy supply facilities.

Except as above indicated references cited by examiners in Office actions will continue to be automatically supplied without charge simultaneously with the mailing of the actions.

This modifies the notice, "Automatic Furnishing Free Copies of Cited References," which was published in 820 O.G. 1 on November 2, 1965.

RICHARD A. WAHL,
Feb. 24, 1966. *Assistant Commissioner of Patents.*

[824 O.G. 805]

(180) ORDERS FOR REFERENCES CITED IN SHORTENED STATUTORY PERIOD ACTIONS

Effective immediately, the Patent Office will no longer supply copies of references cited on a "Special Handling" basis without the usual additional charge. This service was announced in the OFFICIAL GAZETTE on June 2, 1964.

The Patent Office has, since November 1, 1965, been furnishing one complete set of references cited by Examiners in Office Actions automatically, without charge, simultaneously with the mailing of the actions.

[825 O.G. 811 (Apr. 19, 1966)]

(181) CITATION OF PRIOR ART BY APPLICANTS

The purpose of this notice is to set forth positive guidelines for applicants, their attorneys and agents who desire to submit prior art for consideration by the Patent Office. Such citations of relevant art are welcomed and are encouraged. In order that they may be most effectively considered by the examiner, however, with as little disruption of the regular examination process as possible, it is requested that they be submitted in accordance with the following guidelines.

(1) Citations should be submitted within three months after the application filing date if possible. Any citation made after the first action on the merits (if this occurs more than three months after filing) should be accompanied by an explanation of why it was not earlier presented. This may take the form of a statement that it was made as soon as the art or other material was discovered, or as soon as its pertinency was appreciated, indicating the date of discovery of the cited material or its pertinency.

(2) Full text copies of the pertinent portions of all such prior art citations or other material relevant to patentability of the claimed invention should be supplied, whether the citation is made in a separate paper or in the specification of the application. This will be unnecessary in the case of pending or abandoned United States applications (e.g. Defensive Publications). In the case of publications, a copy of the title page, its copyright notice or other indication of a publication date, and copies of the entire pages which contain the text of the relevant material will be sufficient.

While patent copies are, of course, available in the Patent Office, failure of the applicant to include copies of the cited art means that the examiner must interrupt his examination until copies can be ordered and received. Since the person making the citation will have copies in hand, an overall saving in time and more expeditious examination will result if copies are supplied with the citation.

(3) If the reference is not in English, a translation of its pertinent portions should be included.

(4) Accompanying each citation should be an indication of its pertinency to the claimed subject matter, together with any reasons applicant may wish to point out why the claims are considered to be patentable over the cited material.

All citations of prior art or other material submitted in accordance with the above guidelines and submitted before all claims have been indicated as allowable will be fully considered by the examiner.

While the Patent Office will not knowingly ignore any prior art which might anticipate or suggest the claimed invention, no assurance can be given that cited art or other material not submitted in accordance with these guidelines will be considered by the examiner. Consequently, any patent issuing on the application in question would not be expected to be accorded the usual presumption of validity with respect to such cited art or material.

After the claims have been indicated as allowable by the examiner, e.g., by the mailing of an *Ex parte* Quayle action, a notice of allowability (POL–327), an examiner's amendment (POL–37), or a Notice of Allowance, any citations submitted will be placed in the file. Since prosecution has ended, however, such submissions will not ordinarily be considered by the examiner unless the citation is accompanied by:

(*a*) A proposed amendment cancelling or further restricting at least one independent claim and narrowing the scope of protection sought;

(*b*) A timely affidavit under Rule 131 with respect to the material cited; or

(*c*) A statement by the applicant or his attorney or agent that, in the judgment of the person making the statement, the prior art or other material cited raises a serious question as to the patentability of the claimed subject matter.

If the material is submitted after the base issue fee has been paid, it must also be accompanied by a petition under Rule 183 (37 CFR 1.183) requesting a waiver of Rule 312 (37 CFR 1.312). Such petition, if granted, would result in review of the art by the examiner and possible entry of the amendment.

Submitted citations will not in any way diminish the obligation of examiners to conduct independent prior art searches, or relieve examiners of citing pertinent prior art of which they may be aware, whether or not such art is cited by the applicant. Nothing in this notice is intended to relieve applicants of any responsibility they may have to cite known prior art to the Patent Office.

If the specification or a separate paper filed in the application contains citations relating to background material, applicant has the responsibility of determining whether or not such material is sufficiently relevant to the claimed invention that full compliance with these guidelines is necessary.

Prior art submitted by applicant in the manner provided herein will not be supplied with an Office action, but will be listed on the Form PO–892, "Notice of References Cited," along with other prior art relied upon by the examiner during the examination. Only that prior art listed by the examiner on Form PO–892, will be printed on the patent. However, the complete listing of applicant's citations will be in the application file and will be available for inspection by the public after issuance of the patent.

Citations of prior art may be placed of record in the patented file after the grant of the patent at the request of the patentee (see Section 100(d) of Title 35, United States Code, for definition of patentee). Any such submissions by the patentee will be placed in the patented file without comment by the Patent Office. Citations submitted to the Patent Office by third parties will not be placed in the record of a patented file unless the party submitting the art certifies that he has sent the owner of record copies of the cited art and of his letter transmitting it to the Patent Office.

Prior Notices

This notice supersedes the notices of:
December 10, 1963 (797 O.G. 733)
April 24, 1964 (802 O.G. 601)
June 22, 1964 (804 O.G. 1)
July 24, 1964 (805 O.G. 294)
April 13, 1967 (837 O.G. 1032)

WILLIAM FELDMAN,
Aug. 12, 1974. *Deputy Assistant Commissioner for Patents.*

[926 O.G. 2]

(182) REFERENCE CITATION IN CONTINUATION APPLICATIONS

Effective December 1, 1967, the Office will discontinue the practice of furnishing, automatically and without charge, copies of references cited in continuation applications if they had been previously cited in the parent application.

In the rare instance where no art is cited in a continuation application, all the references cited during the prosecution of the parent application will be listed at allowance for printing in the patent.

Other continuing applications, including continuation-in-part and divisional applications, are not affected by this change.

RICHARD A. WAHL,
Nov. 1, 1967. *Assistant Commissioner.*

[846 O.G. 1022]

(183) PATENT CLASSIFICATION

As a service to the public, effective with the issue of December 10, 1968, all patents will contain at the end of the specification, after the "List of References," a list of all classes and subclasses in the U.S. Classification System into which the patent was cross-referenced at the time of issue. This listing will be headed "U.S. Cl.—X.R."

Beginning with the issue of January 7, 1969, all patents will also include International Patent Classifications in the heading and identified as " Int. Cl."

RICHARD A. WAHL,
Nov. 29, 1968. *Assistant Commissioner.*

[858 O.G. 1029]

(184) CONCORDANCE: UNITED STATES PATENT CLASSIFICATION TO INTERNATIONAL PATENT CLASSIFICATION

A revised and updated edition of the "Concordance: United States Patent Classification to International Patent Classification" has been published and is available from the Superintendent of Documents, U.S. Government Printing Office, for $1.50. This second edition is a revision of the edition of April 1969, and contains about 3,000 changes, corrections and additions suggested by users of the book. It includes all new U.S. classes published up to and including November 1971.

W. W. BURNS, JR.,
Apr. 12, 1972. *Administrator, Office of Search Systems and Documentation.*

[898 O.G. 368]

(185) MACHINE SEARCH SERVICE

The Mechanized Search Service presently used by the Patent Office in making examiner searches in the field of Data Processing is offered for public use under the conditions and procedures prescribed herein.

This system is available as a punched card file for an initial fee of $40.00 each. The instruction manual "Search System Manual for the Field of Data Processing-ICIREPAT System DP" is included as part of the "package." A renewal fee of $35.00 per year entitles the subscriber to receive a set of cards for new issues.

This file which presently exists for mechanized searching consists of:

Field	Class	Subclass	File content [1]
Data processing	235	157	2,965 U.S. Patents.
	340	172.5	622 Literature articles.

[1] Approximate number of documents in the files as of June 30, 1971.

The scope and organization of this file is described in the publication "Search System Manual for the Field of Data Processing-ICIREPAT System DP."

A substantial portion of this publication is devoted to the technique of preparing the code sheet which is the means provided for expressing the search query for machine handling.

Effective use of the mechanized search system and the achievement of competent results are dependent upon understanding and care in applying the coding information offered in this publication.

The Patent Office will accept requests for machine searches submitted on code sheets prepared in accordance with instructions contained in the aforedescribed publication. Requests received in any other form will not be accepted, as the Patent Office will not assume the responsibility for the formulation of a search query or the representation of a query in coded form. The Patent Office will, however, provide assistance to persons seeking aid in resolving specific questions which may arise in completing the code sheet prior to submitting the search request. The code sheet serves as the query form for searches on this system.

One or more Examiners have been designated to provide such assistance. A request for a conference on mechanized search questions in the field of Data Processing may be directed to the Supervisory Primary Examiner of Group Art Unit 237.

A search constitutes all of the machine and related operations required to retrieve from a data file, information contained therein which fulfills the search instructions represented on a code sheet. When several code sheets are required to cover the full search need, each code sheet will constitute a search. A search will be considered to be complete and proper even under circumstances in which proper operation of the system produces output representing documents which, while fulfilling the coded requirements, are determined by the user to lack pertinence or relevance in any or a sufficient degree; or, conversely, fails to produce an output.

The cost per search, which includes a list of the document references retrieved, is $5.00. Copies of all U.S. patent and non-patent literature references will be supplied, if requested as part of the search service, for additional cost at established rates, chargeable to a deposit account maintained by the search purchaser with the Patent Office.

Code sheets for the machine search file may be obtained from the Patent Office. Address request to the Patent Office, Office of Search Systems and Documentation, Washington, D.C., 20231.

After any necessary consultation with the Examiner in preparing the search query, address search requests together with the completed code sheet and fee to the Commissioner of Patents, Washington, D.C., 20231. Attention should be directed to the Office of Search Systems and Documentation, Office of the Administrator.

[891 O.G. 886 (Oct. 19, 1971)]

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(186) MACHINE SEARCH SERVICE

The mechanized retrieval system formerly used by the Patent Office in making examiner searches in the field of steroids has been replaced by the ICIREPAT Shared System for this field (System ST). This new system is based upon the original U.S. Patent Office system, with certain additions and modifications. Following are the changes that have been or are being effected:

1. Two sub-systems have been created, one for steroid structures and the other for processes which produce steroid structures.
2. Patents relating to seco, nor, homo- and hetero steroids are within the scope of the new ICIREPAT system and are being added to the system.
3. The new system does not at this time include U.S. patents issued prior to 1965. It is anticipated that U.S. patents from 1961–1964 will be added. To date, no plans have been made for the indexing of non-patent literature.
4. Foreign patents relating to structures and processes within the scope of the sub-systems are being indexed by cooperating foreign patent offices.
5. The ICIREPAT structure sub-system includes substantially the same capabilities for searching compounds as the old system; the card format, however, has been modified.
6. Both the manual and the code sheet have been revised to reflect these additions and modifications as well as a number of other minor changes. The manual is still under revision; however, draft copies are available to users of the system.

The ICIREPAT System ST is offered for public use under the conditions and procedures prescribed herein.

This system is available as a punched card file for an initial fee of $40.00. The instruction manual is still under revision; however, as noted above, draft copies are provided with the card file. A renewal fee of $35.00 per year entitles the subscriber to receive cards for newly issuing patents as well as for older documents (i.e., those indicated in items 2, 3 and 4 above) as these cards become available.

This file which presently exists for mechanized searching consists of:

Field	Class	Subclass	File content [1]
Steroid	260	239.5+	1,937 U.S. Patents.
		397+	1,111 Foreign Patents.

[1] Approximate number of documents in the files as of October 1, 1972.

A substantial portion of the instruction manual is devoted to the technique of preparing the code sheet which is the means provided for expressing the search query for machine handling. Effective use of the mechanized search system and the achievement of competent results are dependent upon understanding and care in applying the coding information offered in this publication.

The Patent Office will accept requests for machine searches submitted on code sheets prepared in accordance with instructions contained in the aforedescribed manual. Requests received in any other form will not be accepted, as the Patent Office will not assume the responsibility for the formulation of a search query or the representation of a query in coded form. The Patent Office will, however, provide assistance to persons seeking aid in resolving specific questions which may arise in completing the code sheet prior to submitting the search request. The code sheet serves as the query form for searches on this system.

One or more Examiners have been designated to provide such assistance. A request for a conference on mechanized search questions in the field of steroids may be directed to the Supervisory Primary Examiner of Group Art Unit 124.

A search constitutes all of the machine and related operations required to retrieve from a data file, information contained therein which fulfills the search instructions represented on a code sheet. When several code sheets are required to cover the full search need, each code sheet will constitute a search. A search will be considered to be complete and proper even under circumstances in which proper operation of the system produces output representing documents which, while fulfilling the coded requirements, are determined by the user to lack pertinence or relevance in any or a sufficient degree; or, conversely, fails to produce an output.

The cost per search, which includes a list of the document references retrieved, is $5.00. Copies of all U.S. and foreign patent references will be supplied, if requested as part of the search service, for additional cost at established rates, chargeable to a deposit account maintained by the search purchaser with the Patent Office.

Code sheets for the machine search file may be obtained from the Patent Office. Address requests to the Patent Office, Office of Patent Classification, Washington, D.C. 20231.

Requests for searches in the original Steroid system will still be accepted, since the revised ICIREPAT system at present includes among the U.S. patents only those which issued after January 1, 1965. The content of this original file, updating for which terminated with the issues of January 1972, is as follows:

5940 U.S. patents
111 Foreign patents
4179 Non-patent literature items

The instruction manual is entitled "Revised Steroid Search System Coding Manual," R & D Report No. 19. Copies of this manual and code sheets may also be obtained from the Office of Patent Classification, and searches may be submitted according to the same procedures and guidelines set forth above for the new ICIREPAT Steroid system.

EDWIN R. MACKERT,
Acting Administrator,
Office of Patent Classification.

[905 O.G. 70 (Dec. 5, 1972)]

POSTAL SERVICE EMERGENCY

(187) EMERGENCY SITUATION IN THE U.S. POSTAL SERVICE

In view of the present emergency situation in U.S. postal service, the U.S. Patent Office is taking the following actions.

In regard to pending applications, the time for taking any action or paying any fee expiring during the period beginning March 16 and ending April 15, 1970, both dates inclusive, is hereby extended for ONE MONTH. However, no extension shall exceed a maximum period for response provided for in the Statutes.

U.S. Department of Commerce Field Offices have been designated, on an emergency basis, as receiving stations for the U.S. Patent Office. All papers should be enclosed in a sealed envelope and deposited in a Field Office. Such papers will be considered as received in the U.S. Patent Office on the day of deposit. The Field Office will date stamp each envelope so deposited, and applicants or their representatives should assure the legibility of the date stamp. Field Offices will place a corresponding date stamp on receipt cards provided by the depositor, which must completely identify the papers deposited.

Field Office deposits should, if possible, be limited to such papers wherein the Patent Statutes do not provide a remedy for failure to obtain a particular date. Examples of these types of papers are: checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, etc.

The Field Office in New York designated to receive papers for the U.S. Patent Office is located at:

41st Floor, Federal Office Bldg.
26 Federal Plaza, Foley Square
New York, N.Y.

The designated Field Office in Hartford, Connnecticut is located at:

Room 610–B, Federal Office Bldg.
450 Main St.
Hartford, Conn.

The addresses of Field Offices in other cities are listed in local directories and are available upon inquiry to the Commissioner of Patents.

RICHARD A. WAHL,
Mar. 19, 1970. *Acting Commissioner of Patents.*

[872 O.G. 1383]

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(188) PATENT OFFICE—POSTAL SERVICE

In view of the return to normal operations of the United States postal service, the Notice of Mar. 19, 1970 (published in the OFFICIAL GAZETTE of Mar. 24, 1970, vol. 872, No. 4) is hereby revised.

After Apr. 15, 1970, the U.S. Department of Commerce Field Offices will no longer be designated as receiving stations for the U.S. Patent Office. Accordingly, after the abovenoted date, all letters or other papers relating to patent and trademark cases will be considered as received in the U.S. Patent Office only if they are filed in accordance with Rule 6 of the Rules of Practice in Patent Cases as amended Nov. 26, 1969.

All other provisions of the Notice of Mar. 19, 1970 and the Notice of Mar. 26, 1970, relating to Trademarks, remain in effect.

WILLIAM E. SCHUYLER, JR.
Mar. 27, 1970. *Commissioner of Patents.*

[873 O.G. 319]

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(189) FILE HISTORY OF APPLICATIONS AFFECTED BY POSTAL EMERGENCY

As a result of the postal emergency, the time for taking any action or paying any fee in the U.S. Patent Office expiring between the dates of March 16, 1970 and April 15, 1970, both dates inclusive, was automatically extended for one month, provided it did not exceed a maximum period for response provided in the Statutes. (See O.G. of March 24, 1970 or March 31, 1970, 872 O.G. 1383 and April 7, 1970, 873 O.G. TM 2.)

Since this extension of time was automatic there will be nothing in the individual files to indicate that a paper filed during that period was, in fact, timely though it was received later than its apparent due date.

In order to provide a complete history in the affected files and to dispel any question as to abandonment in the record of a patented file, applicants or their attorneys are requested to file a paper explaining these circumstances. A separate paper should be filed in each case so affected (identified by Serial No., filing date, title and applicant's name) and may be merely a copy of the notice which authorized the one-month extension or should specifically refer to and identify that notice.

RICHARD A. WAHL,
Apr. 27, 1970. *Assistant Commissioner of Patents.*

[874 O.G. 688]

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(190) U.S. DEPARTMENT OF COMMERCE FIELD OFFICES TO SERVE AS RECEIVING STATIONS ONLY IN DECLARED EMERGENCIES

During the recent postal emergency, Field Offices of the U.S. Department of Commerce were designated as receiving stations for the U.S. Patent Office (according to the Notices of March 19, 1970, 872 O.G. 1383 and March 26, 1970, 873 O.G. TM 2). In view of the subsequent resumption of normal postal operations, that emergency arrangement was discontinued in accordance with the notice of March 27, 1970, 873 O.G. 319. After April 15, 1970, the normal practice with respect to the filing of all letters and other papers relating to patent and trademark matters in the U.S. Patent Office was resumed.

The Patent Office has received suggestions proposing that the Field Offices continue to serve as receiving stations for the U.S. Patent Office. These suggestions have received careful and sympathetic consideration. However, it has been concluded that any activities of the Field Offices in this connection must be restricted, in the future, to any emergency officially announced by the Patent Office as requiring such action.

RICHARD A. WAHL,
Apr. 27, 1970. *Acting Commissioner of Patents.*

[874 O.G. 688]

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(191) PATENTS AND TRADEMARKS

Relief in Cases Affected by the Postal Emergency of March 1970

On June 30, 1971, President Nixon signed into law Public Law 92–34.

Public Law 92–34 requires claims for the benefit of an earlier filing date (Section 1.) and requests for such other relief as may be appropriate (Sec. 2.) to be filed in the Patent Office within 6 months after enactment, that is by December 30, 1971. Failure to file a statement within the noted period will result in loss of right to take advantage of the benefits of the law. Further explanation or evidence may be required at a subsequent time. Public Law 92–34 provides relief only for situations caused by the postal emergency which began on March 18, 1970, and ended on or about March 30, 1970, and for which there is no remedy under existing law.

The following explanation is designed to serve as a guide for persons desiring relief under the law.

The verified statement required to be filed under sections 1 and 2 of the law may be by any of the following:

(a) Applicant(s) for patent or trademark registration;
(b) Patentee(s) or trademark registrant;
(c) Owner(s) of record.

In cases involving plural inventors, statements made under (a) or (b) must be signed by all inventors.

The verified statement must specify the particular earlier date of receipt in the Patent Office to which the applicant, patentee or trademark registrant, or owner of record believes his application, fee or other paper would be entitled except for the delay caused by the postal emergency of March, 1970. The statement must be verified, that is, in the form of an oath or declaration. (37 CFR 1.68 (Patent Rule 68) and 2.20 (Trademark Rule 2.20).)

Evidence will not normally be required or considered by the Patent Office regarding a claimed filing date of March 18, 1970, or later, in applications actually filed before June 1,

1970. Claims for earlier filing dates in cases actually filed after June 1, 1970, or claiming a date prior to March 18, 1970, will be considered prima facie unreasonable unless an acceptable explanation of the basis for the claim is filed in the Patent Office with the claim or within 1 month or such longer time as may be prescribed by the Commissioner. Any claim not accepted by the Patent Office because it is obviously defective on its face or unreasonable may be subjected to further review by petition to the Commissioner.

The statement should adequately identify the involved application, patent, or trademark registration by including the name of the applicant, patentee or registrant, title of the invention or an identification of the mark, serial number, filing date, group art unit number and any other identifying data such as status of the case (e.g., awaiting first action, amendment, brief, etc.). Acceptable statements will be acknowledged, made of record and retained in the Patent Office files.

When practical, earlier filing dates accorded under this law, as well as the originally granted filing dates, will be identified on ensuing patents and trademark registrations. These dates will also be included in the OFFICIAL GAZETTE in connection with patents, trademark registrations and trademarks published for opposition. In other cases, such as applications in issue prior to filing of a claim, the patent or trademark registration number and claimed filing dates will be published in the OFFICIAL GAZETTE after December 30, 1971.

Patents issued with earlier filing dates afforded by this law will not be effective as prior art as of such earlier filing dates under subsection 102(e) of title 35 of the United States Code.

In a pending patent application in which a claim for an earlier filing date has been acknowledged under this law, applicants need not file a Rule 131 affidavit to overcome a reference having an effective filing date between the "earlier" and the actual filing date of the application. Intervening references of this type will be cited but not applied by the examiner. Although a statement claiming an earlier date is accepted by the Patent Office, the claimed earlier date may be called into question in subsequent inter partes proceedings in the Patent Office or in the courts. In these proceedings, the applicant or owner may be required to present further evidence establishing the filing date to which the application is entitled. In such cases a definite determination shall be made as to whether the applicant is entitled to the earlier date under the law.

In cases where a patent application or an application for registration or late renewal of a trademark is determined to have become abandoned for failure to meet a statutory time limit because of the postal emergency, the application will automatically be restored to pending status by the acceptance of the request, and prosecution or other processing of the application will be resumed. Similarly, if a trademark registration is determined to have been cancelled for failure to meet the statuory time limit within which to file the affidavit required under section 8 of the Trademark Act (15 U.S.C. 1058a) because of the said emergency, the order for cancellation will be rescinded.

As explained in the notice of January 26, 1971 (882 O.G. 1342), applicants who may be entitled to earlier filing dates should note that a change in their U.S. filing date might, in turn, alter the date of expiration of the 6- and 12-month periods for filing applications abroad under provisions of the Paris Convention for the Protection of Industrial Property.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Dated: July 14, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-10469; Filed 7-22-71; 8:52 a.m.]

36 F.R. 13694; July 23, 1971

[889 O.G. 1064]

MISCELLANEOUS

(192) JOINT UNITED STATES-REPUBLIC OF THE PHILIPPINES PROGRAM

I am pleased to announce the availability of an exchange program on examination results between the United States and the Republic of the Philippines. The program involves patent applications filed in the United States which are subsequently followed by corresponding applications filed in the Republic of the Philippines and patent applications filed in the Philippines subsequently followed by corresponding applications filed in the United States.

The program would operate as follows:

The applicant would file his application in the U.S. Patent Office which would process the application in the normal manner and examine the application in the usual time sequence.

If the applicant should later file a corresponding application in the Philippines Patent Office, he may elect to use the special filing procedure. Under this special filing procedure, applicant files his application in the Philippines accompanied by a notice of election to participate in the special procedure; which notice of election contains a certification that the description (excluding references to related applications), claims and drawings are identical to those of the corresponding application originally filed in the United States. The earlier filed application must be fully identified; and, in applications without a claim of priority, a certified copy of the earlier filed U.S. application must be submitted to the Philippines Patent Office. In addition, applicant must also agree that all amendments to his U.S. application will also be made with respect to his application filed in the Philippines.

In the U.S. Patent Office, applicant will regularly file two copies of each amendment, one copy must be marked "Copy for Philippines Patent Office." Upon termination of prosecution the U.S. Patent Office shall remove all copies so marked from the U.S. file and promptly forward the same to the Philippines Patent Office.

Election forms for participation in this special program must be signed in duplicate and simultaneously accompany the application to be filed in the Philippines.

Upon receipt of properly filed notice of election, the Philippines Patent Office would notify the U.S. Patent Office of the election by forwarding one copy of the election forms to the U.S. Patent Office. The Philippines Office would defer action on the Philippines application pending receipt of information as to the disposition of the application by the U.S. Patent Office. If no such information is received by the Philippines Office within a reasonable amount of time from the date of filing in the Philippines, the Philippines Office may, either on its own initiative, or applicant's request, inquire as to the status of the U.S. application and, if desired, proceed with its own independent examination.

Upon disposal of the application by the U.S. Patent Office, appropriate information will be sent to the Philippines Patent Office which will include all necessary identifying data, whether allowed or abandoned, notice of allowance, copies of documents cited during examination, a copy of the last office action and, when necessary, any earlier actions which may be included by reference in the last action. The Philippines Office would then make their own complete office action based upon the claims as amended with the U.S. Patent Office, performing whatever checks desired and search for copending interfering applications. Alternatively, the Philippines may request applicant to show cause why the results of the U.S. examination should not be accepted in the Philippines. All avenues of appeal would remain open to the applicant.

Where copending applications are cited and applied during examination in the U.S. Patent Office, full examination would not be forwarded to the Philippines Patent Office, and the fact that a U.S. copending application was cited would be noted as a matter of information, since such references would be inapplicable in the Philippines.

Where the application originates in the Philippines Patent Office and is subsequently filed in the U.S. Patent Office, a similar procedure as outlined above consonant with U.S. Law will be followed.

It is believed that this program will facilitate the handling of U.S. origin applications filed in the Republic of the Philippines resulting in a savings in time and expense of prosecution to U.S. applicants.

Election forms for participation in this special program are now available from The Foreign Exchange Section, Office of Patent Services.

GERALD D. O'BRIEN,
Assistant Commissioner.

[847 O.G. 331 (Feb. 13, 1968)]

(193) JOINT U.S.-SWEDISH SEARCH EXCHANGE

A program for the exchange of search results between the patent offices of Sweden and the United States was initiated in February 1969. The program which is now in full operation involves patent applications filed in one country which are subsequently followed by corresponding applications filed in the other.

The program operates as follows:

The applicant files an application in the U.S. Patent Office which then processes the application in the customary manner and in the usual time sequence.

If the applicant later files an application in Sweden claiming the priority of the U.S. application, the Patent Office of Sweden notifies the U.S. Patent Office of this filing by forwarding a request for a list of the references cited by the U.S. examiner in the first office action on the merits.

Where the application originates in Sweden and is subsequently filed in the U.S. Patent Office, a similar procedure is followed whereby the U.S. office requests and the Swedish office supplies a list of references cited by the Swedish examiner.

This program, which involves only the furnishing of listings of references cited, could improve the quality of the patents granted by each office.

WILLIAM E. SCHUYLER, JR.,
Aug. 26, 1969. *Commissioner of Patents.*

[866 O.G. 1031]

(194) DEFENSIVE PUBLICATION PROGRAM

The open season of the New Defensive Publication Program, originally announced in the OFFICIAL GAZETTE of May 7, 1968 (850 O.G. 1) as terminating November 1, 1968, is hereby extended. Accordingly, until January 1, 1969, this program will be open for any pending application awaiting first action by the Patent Office at the time of the request without regard to the filing date of that application.

As originally announced this program will continue to be open until further notice to any applicant having an application awaiting action by the Patent Office and who files a written request no later than eight (8) months after the earliest U.S. effective filing date of the designated application.

RICHARD A. WAHL,
Oct. 1, 1968. *Assistant Commissioner.*

[855 O.G. 1109]

(195) DEFENSIVE PUBLICATION PROGRAM

The notice of October 1, 1968 (855 O.G. 1109) which extended the open season of the New Defensive Publication Program until January 1, 1969, is herby modified to further extend the open season indefinitely. Accordingly, until further notice any patent application which has not been given a first action may be entered in the Defensive Publication Program.

RICHARD A. WAHL,
Dec. 20, 1968 *Assistant Commissioner.*

[858 O.G. 687]

(196) DEFENSIVE PUBLICATION PROGRAM

1. To resolve certain inherent publication and reference problems, and to establish and treat Defensive Publication Applications (notices published in 33 F.R. 5623, April 11, 1968, and O.G. 1221, April 30, 1968) in the same manner as patents, the following changes are being made:

a. Publication is to be weekly beginning with 869 O.G. No. 3, December 16, 1969, and

b. Distinct numbers are to be assigned per example:

T 869 001
- 001 — Number series, 001–999 available monthly.
- 869 — O.G. volume number.
- T — Document category, T for Technical disclosure.

2. Defensive Publications will continue to be included in sub-class lists and subscription orders. The new number will be used for all official reference and document copy requirements.

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RICHARD A. WAHL,
Nov. 21, 1969. *Assistant Commissioner.*

[869 O.G. 687]

(197) ABANDONED APPLICATIONS REFERRED TO IN DEFENSIVE PUBLICATIONS

[37 CFR Part 1]

Public Inspection

Notice is hereby given that, pursuant to authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793 (35 U.S.C. 6), as amended October 5, 1971, Pub. L. 92–132, 85 Stat. 364, the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising § 1.14(b).

All persons are invited to present in writing their views, objections, recommendations or suggestions in connection with the proposed amendment to the Commissioner of Patents, Washington, D.C. 20231 no later than June 30, 1974. Submissions made pursuant to this notice may be inspected by any person, upon written request, a reasonable time after the closing date for submitting comments.

The proposed amendment would open to public inspection those abandoned patent applications which are referred to in Defensive Publication applications opened to public inspection pursuant to §§ 1.11(b) and 1.139. The purpose of the proposal is to encourage greater use of the Defensive Publication Program provided under § 1.139.

The objective of the Defensive Publication Program is "to provide better service to the public by making available the technical disclosure of certain applications in which the owner may prefer to publish an abstract in lieu of obtaining an examination by the Patent Office" (notice published on April 11, 1968, in 33 FR 5623, and in 849 O.G. 1221 on April 30, 1968). To accomplish that objective, §§ 1.11(b) and 1.139 open the complete Defensive Publication application to inspection by the general public upon publication of the abstract. The proposed amendment would have the effect of placing a Defensive Publication application on the same footing as an issued patent, insofar as making technical disclosures available to the public is concerned, by opening to public inspection an abandoned patent application referred to in the Defensive Publication application as well as in an issued patent. Applicants would benefit from the assurance that the disclosure of an abandoned application, which is referred to in a Defensive Publication application, would be open to public inspection and need not be repeated in the Defensive Publication application.

The text of the proposed revised rule is as follows:

§ 1.14 *Patent applications preserved in secrecy.*

* * * * * *

(b) Except as provided in § 1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application which is open to inspection pursuant to § 1.139, is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant. Abandoned applications may be destroyed after 20 years from their filing date, except those to which particular attention has been called and which have been marked for preservation. Abandoned applications will not be returned.

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Dated: May 20, 1974.

C. MARSHALL DANN,
Commissioner of Patents.

Approved: May 28, 1974.

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 74-12726; Filed 6-3-74; 8:45 am]

Published in 39 F.R. 19786

[923 O.G. 1230]

(Pending—No Final Action Taken)

(198) PATENT PRINTING PRIORITY

In view of the backlog of allowed cases waiting to be printed, the applications placed in the weekly formulation of an issue set aside for printing will be selected according to the following priorities:

1. Allowed cases which were made special by the Commissioner (including those under the New Special Examining Procedure).
2. Allowed cases that are more than five years old.
3. Allowed reissue applications.
4. Allowed applications having an effective filing date earlier than that required for declaring an interference with a copending application claiming the same subject matter.
5. Allowed application of a party involved in a terminated interference.
6. Allowed applications in which the applicant has filed a request in the nature of a petition setting forth his reasons for advancing the printing date.
7. Allowed applications ready for printing and not covered by any of the six preceding categories. The selection of cases in the involved category will be by chronological sequence based on the date the issue fee was paid.

To ensure that any application falling within the scope of the categories outlined above and identified by numbers 1 to 5 receives special treatment the Examiners should staple on the file wrapper a tag entitled "Special in Issue and Gazette Branch." The special tag, PO–364, may be obtained from the Group Clerk. The Examiner shall print directly on the tag the recitation "In Issue and Gazette Branch" and the appropriate printing category outlined above. The application is then forwarded to Issue and Gazette Branch in accordance with existing procedures.

The personnel in Issue and Gazette Branch will then set the tagged cases aside and make a notation on all copies of the Notice of Allowance to be mailed that further processing of this application will be "special."

In cases falling in category No. 6, the request must be filed after the Notice of Allowance has been received and no later than the date the issue fee is paid. The request must be directed to the Head of the Issue and Gazette Branch.

RICHARD A. WAHL,
Nov. 29, 1968. *Assistant Commissioner.*

[857 O.G. 1327]

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(199) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

SUBCHAPTER A—GENERAL

SUBCHAPTER B—GOVERNMENT INVENTIONS JURISDICTION

EDITORIAL NOTE: Chapter I of Title 37 of the Code of Federal Regulations is changed by designating the existing text as Subchapter A—General, and inserting a new Subchapter B—Government Inventions Jurisdiction, containing former Parts 300, 301, and 302 which are transferred from Chapter III of this title and redesignated as follows:

Part
100 Administration of a uniform patent policy with respect to the domestic rights in inventions made by Government employees.
101 Acquisition and protection of foreign rights in inventions.
102 Licensing of foreign patents acquired by the Government.

Accordingly, all references to sections in former Parts 300, 301, or 302 shall be deemed to be to sections in Parts 100, 101, and 102. Thus, a reference to former § 300.1 shall be considered a reference to § 100.1.

CHAPTER III—GOVERNMENT INVENTIONS JURISDICTION, PATENT OFFICE, DEPARTMENT OF COMMERCE

TRANSFER OF REGULATIONS

The text of Chapter III of Title 37 of the Code of Federal Regulations is transferred to Chapter I of this title as Subchapter B—Government Inventions Jurisdiction. Former Parts 300, 301, and 302 are redesignated Parts 100, 101, and 102 respectively.

Published in 34 F.R. 20383, Dec. 31, 1969

[870 O.G. 1039]

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(200) DELAY IN ISSUANCE OF PATENTS

On June 9 and June 16, 1970, only reissue patents, design patents, and trademark registrations will be issued due to circumstances involving the printing of patent specifications. Delays may occur in filling orders for newly issued patents.

WILLIAM E. SCHUYLER, JR.,
May 21, 1970. *Commissioner of Patents.*

[875 O.G. 327]

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(201) PATENT FRONT PAGE FORMAT

August 4, 1970 marks the inauguration of certain changes and innovations in the form and method of producing printed copies of patents. Nearly 100 patents in this issue were electrophotographically composed for printing as part of a comprehensive system for developing and utilizing a patent full-text library in computer processable form. Numbers of patents produced in this manner are scheduled to increase until *all* patents enter the machineable data base.

Patents produced by this new system are distinguishable in appearance from all others in the following respects:

(a) Front page

The first sheet of each patent presents an arrangement of the applicable bibliographic type of data elements which are itemized and discussed elsewhere; an abstract of the disclosure (or a claim when no abstract is available); and, a reduced reproduction of a representative drawing figure when the patent contains any drawings.

(b) Other changes

With identification of the patent appearing on the front page, the title of the invention and the name of the inventor will no longer be printed in the heading of drawings. The patent number, date of issuance, and sheet-of-sheets information will continue to be printed on the drawings.

All of the bibliographic type of data and the abstract which previously appeared on sheets containing text matter are removed from such pages and consolidated on the front page.

Data elements presented on the front page are accompanied by a number which appears in brackets.

The numbers are data element identifiers which have been adopted internationally for use on patents and published applications to facilitate the worldwide use of such documents as set forth below:

[11] Patent number
[21] Application number
[22] Filing date
[31] Application number (of a Convention priority application)
[32] Filing date (of Convention priority application)
[33] Country in which the Convention priority application was filed
[45] Date of Patent issue: followed by terminal disclaimer, if any
[51] International Patent Classification: basic classification in bold face type; other in light face
[52] U.S. Classification: Original class and subclass in bold face type; cross-references in light face
[54] Title of the invention: Followed by the number of claims and drawing figures
[56] References cited: List of prior art documents cited by the examiner, arranged in the following categories:
United States Patents
Foreign Patents or Applications
Other Publications
[60] Related U.S. Applications:
[62] Due to Division(s)
[63] Due to Continuation(s)
[64] Due to reissue(s)

[72] Name(s) of the Inventor(s)
[73] Assignee(s)
[*] Field of Search: Subclasses recorded on the file wrapper as searched by the examiner
[*] Primary Examiner: The person responsible for review of the patent allowance or who, in addition, examined and allowed the patent application
[*] Assistant Examiner: the person who examined and allowed the patent application, other than a primary examiner
[*] Attorney: the principal attorney of record at the time the allowed application was prepared for patent printing
[*] Abstract

Element numbers have not been assigned to the items denoted by the sign [*]

For earlier information respecting the front page format and date entries, reference is made to the notice published in the OFFICIAL GAZETTE of March 11, 1969 (860 O.G. 336–7).

WILLIAM E. SCHUYLER, JR.,
July 16, 1970. *Commissioner of Patents.*

[877 O.G. 1]

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(202) CHANGES IN PATENT FRONT PAGE

Changes in the front page format of patents inaugurated August 4, 1970 will become effective with the issue of patents on January 18, 1972. They relate mainly to the sequence and grouping of data items and to various features of typography. The revised format is illustrated in a specimen which appears below.

Data elements presented on the front page are accompanied by a number which appears in brackets. They are the "ICIREPAT Numbers for Identification of Data" (INID) which have been adopted internationally for use on patents and published applications to facilitate the use of such documents.

The definitions of INID numbers for data elements which appear in U.S. patents are set forth below:

[15] "Number of an examined patent, inventor's certificate or like granted or approved document."
[21] "Number as assigned to the application. . . ."
[22] "Date(s) of filing of application(s)."
[30] "Convention priority data."
The separate elements comprising such data—i.e., application number, filing date, and country—are not individually coded on U.C. patents. Only the generic INID number is used.
[45] "Date of publication by printing or similar process of a patent or like approved document."
[51] "International Patent Classification (preferably preceded by "Int. Cl.")."
[52] "Domestic or national classification."
[54] "Title of the invention."
[56] "List of prior art documents, if separate from the text of the document."
[57] "Abstract or claim."
[58] "Field of search."
[60] "Reference to other applications filed or documents issued in the same country, to which the document is legally related."
This generic INID number is used when the relationship of the patent to other applications is due both to [62] division and [63] continuation.
[62] "Reference to other applications filed or documents issued in the same country, to which the document is legally related: Relation due to division(s)."
[63] "Reference to other applications filed or documents issued in the same country, to which the document is legally related: Relation due to continuation(s)."
[72] "Name(s) of inventor(s) if known to be such."
[73] "Name of grantee(s) if other than applicant or inventor."

R. J. RISH,
Dec. 21, 1971. *Acting Assistant Commissioner for Administration.*

SPECIMEN

United States Patent

Clark et al.

[15] **3,624,090**

[45] **Nov. 30, 1971**

[54] PREPARATION OF PYRIDINE

[72] Inventors: **Duncan Clark**, Norton-on-Tees; **Percy Hayden**, Norton-on-Tees; **Alan Bell**, Runcorn; **John Edward Colchester**, Runcorn, all of England

[73] Assignee: **Imperial Chemical Industries Limited**, London, England

[22] Filed: **Apr. 7, 1969**

[21] Appl. No.: **817,251**

Related U.S. Application Data

[60] Continuation-in-part of Ser. No. 669,733, Sept. 22, 1967, abandoned, which is a division of Ser. No. 493,231, Oct. 5, 1965, abandoned.

[30] **Foreign Application Priority Data**

Apr. 7, 1965 Great Britain.....14,778/65

[52] U.S. Cl.....260/83.7 R, 252/431, 260/94.2 M
[51] Int. Cl.....C08d 1/32, C08f 1/56, C08f 15/04
[58] Field of Search.....260/94.2 M, 83.7, 665; 252/431, 431 P

[56] **References Cited**

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3,372,128	3/1968	Maeda et al.	260/604
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FOREIGN PATENTS OR APPLICATIONS

878,802	10/1961	Great Britain	260/530 U
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Dandegaonker et al. Monatsh. Chem. Vol. 96, No. 2, pages 614–624 (1965) Q 1.M73
Jerchel et al. Liebig's Ann. Chem. Vol. 575, pages 162–173 (1952). QD1.L7
Rao et al Chem Abst. Vol. 53, columns 18012–3 (1959) QD1.A51

Primary Examiner—Henry R. Jiles
Assistant Examiner—Cecilia M. Shurko
Attorney—Cushman, Darby & Cushman

[57] **ABSTRACT**

There is provided a process for preparing pyridine wherein substituted or unsubstituted glutaraldehydes or precursors thereof are reacted in the liquid phase with ammonium ions in the presence of molecular oxygen and cupric ions and in a medium comprising an alkanoic acid. The alkanoic acid preferably has up to 6 carbon atoms in the alkyl group, such as acetic acid. The cupric ions may be supplied in the form of a salt such as cupric acetate. Conveniently, the reaction temperature is up to 150° C. and the partial pressure of oxygen is at least 0.5 atmospheres.

10 Claims, No Drawings

[894 O.G. 464]

(203) PRINTING PRACTITIONER'S NAMES ON PATENTS

On September 8, 1972 (903 O.G. 369), the Patent Office requested comments on a proposal regarding the printing of a firm name or the names of individual practitioners on the patent, as indicated by the applicant at the time the issue fee is paid. The comments received indicated strong support for the proposed procedure.

In view of these comments, the Patent Office has adopted the following revised procedure for printing a firm name, the names of up to three registered patent practitioners, or no practitioner's name on the patent.

The Notice of Allowance form, POL–85, has been redesigned in part to provide a space on POL–85*b*, the Base Issue Fee Transmittal form, for the person submitting the base issue fee to indicate, for printing, the names of up to three registered patent attorneys and agents or, alternatively, the name of a single firm which has as a member at least one registered patent attorney or agent. If the person submitting the base issue fee desires that no practitioner's name be printed on the patent, the space provided on the revised Base Issue Fee Transmittal form should be left blank. If no name is given, no name will be printed.

The adoption of this new procedure is intended to solve various problems encountered since the practice of recognizing firms was discontinued. While some slight additional effort on the part of the attorney or agent is thus involved if he desires to have a printed entry on the patent, the following advantages are provided by the new procedure: (1) it permits printing firm names on patents even though firms are no longer registered with or recognized by the Patent Office in new application; (2) it allows the names of those individuals who actually performed the work of preparing and prosecuting the application to appear on the printed patent; and (3) it grants an attorney or agent the option of not having his name appear on the printed patent.

The revised form POL–85 will be placed in use as soon as a supply of the form is received from the printer. Thereafter, the new practice, as indicated above, will be followed in patent printing as the Base Issue Fee Transmittal Portion of that form (POL–85*b*) is received.

RENE D. TEGTMEYER,
Aug. 3, 1973. *Acting Commissioner of Patents.*

[913 O.G. 1042]

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(204) THE U.S. AND THE U.S.S.R. AGREE ON THE ADMINISTRATION OF INTELLECTUAL PROPERTY RIGHTS

The U.S.-U.S.S.R. Joint Commission on Scientific and Technical Cooperation, at its meeting in Moscow on November 28–29, 1973, reached an agreement on the guiding principles and terms of reference for the administration of intellectual property rights arising from joint *non-commercial* cooperative research and development activities under the Agreement on Cooperation in the Fields of Science and Technology of May 1972. A copy of the record of this meeting may be secured by writing to the Office of Legislation and International Affairs, U.S. Patent Office, Washington, D.C. 20231.

C. MARSHALL DANN,
Mar. 13, 1974. *Commissioner of Patents.*

[921 O.G. 432]

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(205) TERMINATION OF THE "RULES OF PRACTICE IN PATENT CASES" BOOKLET

The Superintendent of Documents has informed the Patent Office that the basic rule book entitled "Rules of Practice in Patent Cases" is out of print and no longer available. Furthermore, Revision 3, dated July 1973, is the last revision covered by the current subscriptions. A booklet entitled "37 Code of Federal Regulations," published by the Office of the Federal Register, contains all patent rules and forms, as well as trademark rules and forms and copyright rules. Inasmuch as this publication is revised annually and is more economical to both the public and the Patent Office even if repurchased annually, the Patent Rules of Practice booklet will not be reprinted, thereby terminating this duplication of printing. Consequently, it is suggested that persons desiring a copy of the patent rules order a copy of "37 Code of Federal Regulations" from the Superintendent of Documents. The price for the most recent issue, dated July 1, 1973, is $1.75.

The Patent Office will supply all patent examiners and other appropriate employees with a copy of "37 Code of Federal Regulations" annually beginning with the July 1974 edition.

Since the inventory of the Trademark Rules of Practice booklet is in large supply, it will continue to be offered for sale by subscription from the Superintendent of Documents and updatings will continue to be published periodically.

C. MARSHALL DANN,
Mar. 18, 1974. *Commissioner of Patents.*

[921 O.G. 860]

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(206) AVAILABILITY OF RULES OF PRACTICE

A new edition of "37 Code of Federal Regulations," revised to July 1, 1974 is now available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 for $1.75. The catalog number is GS 4.108: 37/9–74.

This booklet is published by the Office of the Federal Register and contains all patent rules and forms, trademark rules and forms as well as the copyright rules.

The looseleaf booklet entitled "Rules of Practice in Patent Cases" is no longer available. However, the looseleaf "Trademark Rules of Practice" booklet is still available for $3.50 ($1 additional for foreign mailing).

RENE D. TEGTMEYER,
Aug. 20, 1974. *Acting Commissioner of Patents.*

[926 O.G. 732]

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(207) DISCLOSURE DOCUMENT PROGRAM

This notice consolidates and supersedes the notices of Mar. 26, 1969 (862 O.G. 1) and Aug. 11, 1970 (878 O.G. 1) relating to the Patent Office Disclosure Document Program.

Under this program the Patent Office accepts and preserves, for a period of two years, papers referred to as "Disclosure Documents." These papers may be used as evidence of the dates of conception of inventions.

THE PROGRAM

A paper disclosing an invention and signed by the inventor or inventors may be forwarded to the Patent Office by the inventor (or by any one of the inventors when there are joint inventors), by the owner of the invention, or by the attorney or agent of the inventor(s) or owner. It will be retained for two years and then be destroyed unless it is referred to in a separate letter in a related patent application within said two years.

A Disclosure Document is not a patent application and the date of its receipt in the Patent Office will not become the effective filing date of any patent application subsequently filed. However, like patent applications, these documents will be kept in confidence by the Patent Office. If patent protection is desired, a patent application should be filed as soon as possible.

This program does not diminish the value of conventional witnessed and notarized records as evidence of conception of an invention, but it should provide a more credible form of evidence than that provided by the popular practice of mailing a disclosure to oneself or another person by registered mail. The program is made available as a service to those persons desiring to use it.

CONTENT OF DISCLOSURE DOCUMENT

Although there are no restrictions as to content and claims are not necessary, the benefits afforded by a Disclosure Docu-

ment will depend directly upon the adequacy of the disclosure. Therefore, it is strongly urged that the document contain a clear and complete explanation of the manner and process of making and using the invention in sufficient detail to enable a person having ordinary knowledge in the field of the invention to make and use the invention. When the nature of the invention permits, a drawing or sketch should be included. The use or utility of the invention should be described, especially in chemical inventions.

The Disclosure Document must be limited to written matter or drawings on paper or other thin, flexible material, such as linen or plastic drafting material, having dimensions or being folded to dimensions not to exceed 8½ by 13 inches. Photographs also are acceptable. Each page should be numbered. Text and drawings should be sufficiently dark to permit reproduction with commonly used office copying machines.

A $10 fee is charged for filing a Disclosure Document. Payment must accompany the Disclosure Document when it is submitted to the Patent Office.

In addition to the $10 fee, the Disclosure Document must be accompanied by a stamped, self-addressed envelope and a separate paper in duplicate, signed by the inventor, stating that he is the inventor and requesting that the material be received for processing under the Disclosure Document Program. The papers will be stamped by the Patent Office with an identifying number and date of receipt, and the duplicate request will be returned in the self-addressed envelope together with a warning notice indicating that the Disclosure Document may be relied upon only as evidence and that a patent application should be diligently filed if patent protection is desired. The inventor's request may take the following form:

"The undersigned, being the inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years."

RETENTION

The Disclosure Document will be preserved in the Patent Office for two years after its receipt and will then be destroyed unless it is referred to in a separate letter in a related patent application filed within the two-year period. The Disclosure Document must be referred to in the separate letter by title, number, and date of receipt. Acknowledgment of receipt of such letters will be made in the next official communication or in separate letter from the Patent Office. Unless it is desired to have the Patent Office retain the Disclosure Document beyond the two-year period, it is not required that it be referred to in a patent application.

WARNING AS TO LIMITATIONS

The two-year retention period should not be considered to be a "grace period" during which the inventor can wait to file his patent application without possible loss of benefits. It should be recognized that in establishing priority of invention an affidavit or testimony referring to a Disclosure Document must usually also establish diligence in completing the invention or in filing the patent application since the filing of the Disclosure Document.

Inventors are also reminded that any public use or sale in the United States, or publication of the invention anywhere in the world, more than one year prior to the filing of a patent application on that invention will prohibit the granting of a patent on that invention.

If the inventor is not familiar with what is considered to be "diligence in completing the invention" or "reduction to practice" under the patent law, or if he has other questions about patent matters, the Patent Office advises him to consult an attorney or agent registered to practice before the Patent Office. Patent attorneys and agents may be found in the telephone directories of most major cities. Also, many large cities have associations of patent attorneys which may be consulted.

RICHARD A. WAHL,
Jan. 4, 1971. *Assistant Commissioner of Patents.*

[883 O.G. 3]

(208) SUPPLEMENT TO THE MANUAL OF CLASSIFICATION

Over a span of years, Patent Examiners have created "unofficial" subclasses and digests to facilitate searches within the arts under their jurisdiction. A recent inventory of the unofficial U.S. patents in the Examiner search file (exclusive of designs) has enabled the issuance of a listing of unofficial subclasses and digests as a supplement to the Manual of Classification.

Current subscribers to the Manual of Classification shall receive the Supplement as soon as it becomes available (Sept.–Oct. '71), at a cost to be included in a forthcoming renewal fee. New subscriptions shall include the Supplement at a slightly higher cost.

It should be noted that the Supplement is intended only as an interim publication until such time as the Manual of Classification can be completely reprinted with the unofficial subclasses and digests shown in their proper relationship to respective official classes and subclasses. The reprinted Manual, in the described integrated format, shall be derived from computer stored data now in the process of being compiled and should be available by mid-1972.

WILLIAM R. NUGENT,
July 27, 1971. *Assistant Commissioner.*

[889 O.G. 1064]

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(209) PRESIDENTIAL DOCUMENTS, TITLE 3—THE PRESIDENT

MEMORANDUM OF AUGUST 23, 1971

GOVERNMENT PATENT POLICY

Memorandum for Heads of Executive Departments and Agencies

THE WHITE HOUSE,
Washington, August 23, 1971.

On October 10, 1963, President Kennedy forwarded to the Heads of Executive Departments and Agencies a Memorandum and Statement of Government Patent Policy for their guidance in determining the disposition of rights to inventions made under Government-sponsored grants and contracts. On the basis of the knowledge and experience then available, this Statement first established Government-wide objectives and criteria, within existing legislative constraints, for the allocation of rights to inventions between the Government and its contractors.

It was recognized that actual experience under the Policy could indicate the need for revision or modification. Accordingly, a Patent Advisory Panel was established under the Federal Council for Science and Technology for the purpose of assisting the agencies in implementing the Policy, acquiring data on the agencies' operations under the Policy, and making recommendations regarding the utilization of Government-owned patents. In December 1965, the Federal Council established the Committee on Government Patent Policy to assess how this Policy was working in practice, and to acquire and analyze additional information that could contribute to the reaffirmation or modification of the Policy.

The efforts of both the Committee and the Panel have provided increased knowledge of the effects of Government patent policy on the public interest. More specifically, the studies and experience over the past 7 years have indicated that:

(a) A single presumption of ownership of patent rights to Government-sponsored inventions either in the Government or in its contractors is not a satisfactory basis for Government patent policy, and that a flexible, Government-wide policy best serves the public interest;

(b) The commercial utilization of Government-sponsored inventions, the participation of industry in Government research and development programs, and commercial competition can be influenced by the following factors: the mission of the contracting agency; the purpose and nature of the

contract; the commercial applicability and market potential of the invention; the extent to which the invention is developed by the contracting agency; the promotional activities of the contracting agency; the commercial orientation of the contractor and the extent of his privately financed research in the related technology; and the size, nature and research orientation of the pertinent industry;

(c) In general, the above factors are reflected in the basic principles of the 1963 Presidential Policy Statement.

Based on the results of the studies and experience gained under the 1963 Policy Statement certain improvements in the Policy have been recommended which would provide (1) agency heads with additional authority to permit contractors to obtain greater rights to inventions where necessary to achieve utilization or where equitable circumstances would justify such allocation of rights, (2) additional guidance to the agencies in promoting the utilization of Government-sponsored inventions, (3) clarification of the rights of States and municipal governments in inventions in which the Federal Government acquires a license, and (4) a more definitive data base for evaluating the administration and effectiveness of the Policy and the feasibility and desirability of further refinement or modification of the Policy.

I have approved the above recommendations and have attached a revised Statement of Government Patent Policy for your guidance. As with the 1963 Policy Statement, the Federal Council shall make a continuing effort to record, monitor and evaluate the effects of this Policy Statement. A Committee on Government Patent Policy, operating under the aegis of the Federal Council for Science and Technology, shall assist the Federal Council in these matters.

This memorandum and statement of policy shall be published in the Federal Register.

RICHARD NIXON.

STATEMENT OF GOVERNMENT PATENT POLICY

BASIC CONSIDERATIONS

A. The Government expends large sums for the conduct of research and development which results in a considerable number of inventions and discoveries.

B. The inventions in scientific and technological fields resulting from work performed under Government contracts constitute a valuable national resource.

C. The use and practice of these inventions and discoveries should stimulate inventors, meet the needs of the Government, recognize the equities of the contractor, and serve the public interest.

D. The public interest in a dynamic and efficient economy requires that efforts be made to encourage the expeditious development and civilian use of these inventions. Both the need for incentives to draw forth private initiatives to this end, and the need to promote healthy competition in industry must be weighed in the disposition of patent rights under Government contracts. Where exclusive rights are acquired by the contractor, he remains subject to the provisions of the antitrust laws.

E. The public interest is also served by sharing of benefits of Government-financed research and development with foreign countries to a degree consistent with our international programs and with the objectives of U.S. Foreign policy.

F. There is growing importance attaching to the acquisition of foreign patent rights in furtherance of the interests of U.S. industry and the Government.

G. The prudent administration of Government research and development calls for a Government-wide policy on the disposition of inventions made under Government contracts reflecting common principles and objectives, to the extent consistent with the missions of the respective agencies. The policy must recognize the need for flexibility to accommodate special situations.

POLICY

SECTION 1. The following basic policy is established for all Government agencies with respect to inventions or discoveries made in the course of or under any contract of any Government agency, subject to specific statutes governing the disposition of patent rights of certain Government agencies.

(a) Where

(1) a principal purpose of the contract is to create, develop or improve products, processes, or methods which are intended for commercial use (or which are otherwise intended to be made available for use) by the general public at home or abroad, or which will be required for such use by governmental regulations; or

(2) a principal purpose of the contract is for exploration into fields which directly concern the public health, public safety, or public welfare; or

(3) the contract is in a field of science or technology in which there has been little significant experience outside of work funded by the Government, or where the Government has been the principal developer of the field, and the acquisition of exclusive rights at the time of contracting might confer on the contractor a preferred or dominant position; or

(4) the services of the contractor are

(i) for the operation of a Government-owned research or production facility; or

(ii) for coordinating and directing the work of others,

the Government shall normally acquire or reserve the right to acquire the principal or exclusive rights throughout the world in and to any inventions made in the course of or under the contract.

In exceptional circumstances the contractor may acquire greater rights than a nonexclusive license at the time of contracting where the head of the department or agency certifies that such action will best serve the public interest. Greater rights may also be acquired by the contractor after the invention has been identified where the head of the department or agency determines that the acquisition of such greater rights is consistent with the intent of this Section 1(a) and is either a necessary incentive to call forth private risk capital and expense to bring the invention to the point of practical application or that the Government's contribution to the invention is small compared to that of the contractor. Where an identified invention made in the course of or under the contract is not a primary object of the contract, greater rights may also be acquired by the contractor under the criteria of Section 1(c).

(b) In other situations, where the purpose of the contract is to build upon existing knowledge or technology, to develop information, products, processes, or methods for use by the Government, and the work called for by the contract is in a field of Technology in which the contractor has acquired technical competence (demonstrated by factors such as know-how, experience, and patent position) directly related to an area in which the contractor has an established nongovernmental commercial position, the contractor shall normally acquire the principal or exclusive rights throughout the world in and to any resulting inventions.

(c) Where the commercial interests of the contractor are not sufficiently established to be covered by the criteria specified in Section 1(b) above, the determination of rights shall be made by the agency after the invention has been identified, in a manner deemed most likely to serve the public interest as expressed in this policy statement, taking particularly into account the intentions of the contractor to bring the invention to the point of commercial application and the guidelines of Section 1(a) hereof, provided that the agency may prescribe by regulation special situations where the public interest in the availability of the inventions would best be served by permitting the contractor to acquire at the time of contracting greater rights than a nonexclusive license.

(d) In the situations specified in Sections 1(b) and 1(c), when two or more potential contractors are judged to have presented proposals of equivalent merit, willingness to grant the Government principal or exclusive rights in resulting inventions will be an additional factor in the evaluation of the proposals.

(e) Where the principal or exclusive rights in an invention remain in the contractor, he should agree to provide written reports at reasonable intervals, when requested by the Government, on the commercial use that is being made or is intended to be made of inventions made under Governmental contracts.

(f) Where the principal or exclusive rights in an invention remain in the contractor, unless the contractor, his licensee,

or his assignee has taken effective steps within three years after a patent issues on the invention to bring the invention to the point of practical application or has made the invention available for licensing royalty-free or on terms that are reasonable in the circumstances, or can show cause why he should retain the principal or exclusive rights for a further period of time, the Government shall have the right to require the granting of a nonexclusive or exclusive license to a responsible applicant(s) on terms that are reasonable under the circumstances.

(g) Where the principal or exclusive rights to an invention are acquired by the contractor, the Government shall have the right to require the granting of a nonexclusive or exclusive license to a responsible applicant(s) on terms that are reasonable in the circumstances (i) to the extent that the invention is required for public use by governmental regulations, or (ii) as may be necessary to fulfill health or safety needs, or (iii) for other public purposes stipulated in the contract.

(h) Whenever the principal or exclusive rights in an invention remain in the contractor, the Government shall normally acquire, in addition to the rights set forth in Sections 1(e), 1(f), and 1(g),

(1) at least a nonexclusive, nontransferable, paid-up license to make, use, and sell the invention throughout the world by or on behalf of the Government of the United States (including any Government agency) and States and domestic municipal governments, unless the agency head determines that it would not be in the public interest to acquire the license for the States and domestic municipal governments; and

(2) the right to sublicense any foreign government pursuant to any existing or future treaty or agreement if the agency head determines it would be in the national interest to acquire this right; and

(3) the principal or exclusive rights to the invention in any country in which the contractor does not elect to secure a patent.

(i) Whenever the principal or exclusive rights in an invention are acquired by the Government, there may be reserved to the contractor a revocable or irrevocable nonexclusive royalty-free license for the practice of the invention throughout the world; an agency may reserve the right to revoke such license so that it might grant an exclusive license when it determines that some degree of exclusivity may be necessary to encourage further development and commercialization of the invention. Where the Government has a right to acquire the principal or exclusive rights to an invention and does not elect to secure a patent in a foreign country, the Government may permit the contractor to acquire such rights in any foreign country in which he elects to secure a patent, subject to the Government's rights set forth in Section 1(h).

SEC. 2. Under regulations prescribed by the Administrator of General Services, Government-owned patents shall be made available and the technological advances covered thereby brought into being in the shortest time possible through dedication or licensing, either exclusive or non-exclusive, and shall be listed in official Government publications or otherwise.

SEC. 3. The Federal Council for Science and Technology in consultation with the Department of Justice shall prepare at least annually a report concerning the effectiveness of this policy, including recommendations for revision or modification as necessary in light of the practices and determinations of the agencies in the disposition of patent rights under their contracts. The Federal Council for Science and Technology shall continue to

(a) develop by mutual consultation and coordination with the agencies common guidelines for the implementation of this policy, consistent with existing statutes, and to provide overall guidance as to disposition of inventions and patents in which the Government has any right or interest; and

(b) acquire data from the Government agencies on the disposition of patent rights to inventions resulting from federally financed research and development and on the use and practice of such inventions to serve as bases for policy review and development; and

(c) make recommendations for advancing the use and exploitation of Government-owned domestic and foreign patents.

Each agency shall record the basis for its actions with respect to inventions and appropriate contracts under this statement.

SEC. 4. Definitions: As used in this policy statement, the stated terms in singular and plural are defined as follows for the purposes hereof:

(a) *Government agency*—includes any executive department, independent commission, board, office, agency, administration, authority, Government corporation, or other Government establishment of the executive branch of the Government of the United States of America.

(b) *States*—means the States of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, American Samoa, Guam and the Trust Territory of the Pacific Islands.

(c) *Invention, or Invention or discovery*—includes any art, machine, manufacture, design, or composition of matter, or any new and useful improvement thereof, or any variety of plant, which is or may be patentable under the Patent Laws of the United States of America or any foreign country.

(d) *Contractor*—means any individual, partnership, public or private corporation, association, institution, or other entity which is a party to the contract.

(e) *Contract*—means any actual or proposed contract, agreement, grant, or other arrangement, or subcontract entered into with or for the benefit of the Government where a purpose of the contract is the conduct of experimental, developmental, or research work.

(f) *Made*—when used in relation to any invention or discovery means the conception or first actual reduction to practice of such invention in the course of or under the contract.

(g) *To the point of practical application*—means to manufacture in the case of a composition or product, to practice in the case of a process, or to operate in the case of a machine and under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.

[FR Doc. 71-12623; Filed 8-25-71; 10:41 a.m.]

36 F.R. 16887-16892; Aug. 26, 1971

[890 O.G. 1302]

(210) PUBLIC LAW 92-132

[92nd Congress, S. 1253]

October 5, 1971

AN ACT

85 Stat. 364

To amend section 6 of title 35, United States Code, "Patents," to authorize domestic and international studies and programs relating to patents and trademarks.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 6 of title 35, United States Code, is amended to read as follows:

Patents, trademarks. International programs, U.S. participation. 66 Stat. 793.

"§ 6. *Duties of Commissioner*

"(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies and programs regarding domestic and international patent and trademark law; and shall have charge of property belonging to the Patent Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent Office.

"(b) The Commissioner, under the direction of the Secretary of Commerce, may, in coordination with the Department of State, carry on programs and studies cooperatively with foreign patent offices and international intergovernmental organizations, or may authorize such programs and studies to be carried on, in connection with the performance of duties stated in subsection (a) of this section.

Transfer of funds.

"(c) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, transfer funds appropriated to the Patent Office, not to exceed $100,000 in any year, to the Department of State for the purpose of making special payments to international intergovernmental organizations for studies and programs for advancing international cooperation concerning patents, trademarks, and related matters. These special payments may be in addition to any other payments or contributions to the international organization and shall not be subject to any limitations imposed by law on the amounts of such other payments or contributions by the Government of the United States."

Approved October 5, 1971.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 92-475 (Comm. on the Judiciary).
SENATE REPORT No. 92-71 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 117 (1971):
Apr. 22, considered and passed Senate.
Sept. 28, considered and passed House.

[892 O.G. 1600]

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(211) NUMBERS FOR WHICH NO PATENTS HAVE ISSUED

The Calendar Year 1970 Index of Patents will be available from the Superintendent of Documents, Government Printing Office in the very near future. Beginning with this year's Index, Part II "Subjects of Inventions" will list each patent number for which no patent was issued during the year. The 1970 Index will also include all the patent numbers for the years 1920 through 1969 for which no patents issued.

ROBERT J. RISH,
Dec. 13, 1971. *Acting Assistant Commissioner for Administration.*

[894 O.G. 464]

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(212) NOTICE TO OFFICIAL GAZETTE SUBSCRIBERS

It has come to the attention of the Patent Office that some subcribers to the OFFICIAL GAZETTE have not been receiving all of their copies of the patent and/or trademark sections of the OFFICIAL GAZETTE. Several of the incidents brought to our attention involved situations where subscribers had recently renewed their subscriptions.

This matter was brought to the attention of the Superintendent of Documents who advised us that subscribers to the OFFICIAL GAZETTE are notified approximately 3 months in advance that their subscriptions are about to expire. It was indicated that if these notices are promptly utilized to renew subscriptions, no difficulties will arise.

However, in order to facilitate the resolution of any problems which may arise concerning subscriptions to the OFFICIAL GAZETTE, an official liaison has been established between the Patent Office and the Superintendent of Documents. Under this arrangement, any person experiencing difficulties in obtaining copies of the OFFICIAL GAZETTE should contact Robert Rish, Director, Office of Public Services, U.S. Patent Office, Washington, D.C., 20231. All such inquiries will be given prompt attention.

ROBERT GOTTSCHALK,
Apr. 18, 1972. *Commissioner of Patents.*

[898 O.G. 738]

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(213) NEW SALES PRICES FOR OFFICIAL GAZETTE

The U.S. Government Printing Office recently announced changes in the sales prices for copies of the OFFICIAL GAZETTE

of the U.S. Patent Office. The new scale is effective January 1, 1974.

OFFICIAL GAZETTE—Patents:	
Subscription price	$211.00
Add for foreign mailing	52.75
Single copy price	4.10
OFFICIAL GAZETTE—Trademarks:	
Subscription price	$ 60.25
Add for foreign mailing	15.10
Single copy price	1.25

RENE D. TEGTMEYER,
Nov. 7, 1973. *Acting Commissioner of Patents.*

[916 O.G. 805]

(214) LEGAL JOURNALS

[37 CFR Parts 1, 2]

Withdrawal of Proposed Rule Making Regarding Placing of Announcements

Under date of May 11, 1972, 37 FR 9488 (FR Doc. 72-7160), notice of proposed rule making was given concerning a proposed revision of §§ 1.345(b) and 2.14(b) of Title 37 of the Code of Federal Regulations. The purpose of the proposed revision was to permit persons practicing before the Patent Office to place in legal journals announcements of their availability to act as consultants to or as associates of other lawyers in patent or trademark practice. After careful consideration of all of the comments received on the proposed revision, it has been determined that the proposed revision will not be made at this time and, accordingly, the notice of proposed rule making is canceled and withdrawn.

Dated: Jan. 29, 1973.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved: Jan. 29, 1973.

RICHARD O. SIMPSON,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 73-3097; Filed 2-15-73; 8:45 am]

Published in 38 F.R. 32; Feb. 16, 1973

[908 O.G. 784]

(215) SOLICITATION OF PUBLIC VIEWS CONCERNING CHANGES IN PATENT OFFICE PRACTICES AND PROCEDURES

In the effort to continually improve operations and to respond to changing circumstances, the procedures and practices of the Patent Office are revised from time to time. While comments are requested and public hearings held on proposed changes in the Rules of Practice, changes in other practices and procedures of the Office have generally been implemented on the basis of informal and more limited liaison with our constituents. This has, on occasion, given rise to inquiries as to the reasons for and wisdom of certain of these changes, as well as to criticisms and proposals for further changes.

While all changes in procedure must take into consideration the efficient operation of the Patent Office, we have determined that on a trial basis, we will, where appropriate, solicit views and comments of the patent community so that they might be taken into account in shaping the procedures of the Patent Office. The solicitation of such views will focus primarily on proposed changes in practices and procedures of the Office which have substantial impact on individuals dealing with the Patent Office. Our first such effort involves the question of whether claims or abstracts are more appropriate for publication in the OFFICIAL GAZETTE, and this is the subject of a separate notice in this issue.

Whether this practice of public participation is continued will depend in large part upon the public response to notices of this nature. In the past, public response to the solicitation of views has been rather limited and has principally been from those who were opposed to proposed changes in rules and practices. Accordingly, it is requested that interested parties submit their views irrespective of whether they agree or disagree with the proposal under consideration.

ROBERT GOTTSCHALK,
May 22, 1972. *Commissioner of Patents.*

[899 O.G. 820]

(216) REDUCTION IN PATENTS GRANTED

The backlog of patent applications awaiting printing has been virtually eliminated. Effective with patents issuing on October 31, 1972, the weekly number of General and Mechanical, Electrical, and Chemical patents granted will be determined by the availability of applications in which the Base Issue Fee has been paid. Applicants who desire to obtain early patent grant dates are encouraged to remit payment of Base Issue Fees promptly.

WILLIAM I. MERKIN,
Oct. 10, 1972. *Assistant Commissioner for Administration.*

[903 O.G. 1512]

(217) ICIREPAT NUMBERS FOR IDENTIFICATION OF BIBLIOGRAPHIC DATA ON THE FIRST PAGE OF PATENT AND LIKE DOCUMENTS

The Paris Union Committee for International Cooperation in Information Retrieval Among Patent Offices (ICIREPAT) has recently approved revisions in INID Codes (ICIREPAT Numbers for Identification of Data) which become effective for use by the countries which apply such codes to their documents on January 1, 1973. A complete list of the Codes, as revised, appears below.

Changes in INID Codes which particularly affect their application to U.S. patents consist of the provision of the new codes [75] and [76] that are intended primarily for use by countries in which the national laws require that the inventor and applicant are normally the same. Use of the code [72] which was heretofore applied to U.S. patents will be discontinued and, in lieu thereof, codes [75] and [76], as appropriate, will be used effective with the patent issue of January 2, 1973.

The purpose of INID Codes is to provide a means whereby the various data appearing on the first page of patent and like documents can be identified without knowledge of the language used and the laws applied. They are now used by a number of Patent Offices and have been applied to U.S. patents since Aug. 4, 1970. Some of the codes are not pertinent to the documents of a particular country and some which are may, in fact, not be used. Those codes which are not applicable to U.S. patents or not used are identified in the list below.

[10] *Document identification*
- [11] Number of the document
- [19] ICIREPAT country code, or other identification, of the country publishing the document

[20] *Domestic filing data*
- [21] Number(s) assigned to the application(s), e.g. "Numero d'enregistrement national," "Aktenzeichen"
- [22] Date(s) of filing application(s)
- [23] Other date(s) of filing, including exhibition filing date and date of filing complete specification following provisional specification [1]

[30] *Convention priority data* [2]
- [31] Number(s) assigned to priority application(s) [1]
- [32] Date(s) of filing of priority application(s) [1]
- [33] Country (countries) in which priority application(s) was (were) filed [1]

[40] *Date(s) of making available to the public*
- [41] Date of making available to the public by viewing, or copying on request, an unexamined docu-

See footnotes at end of item.

ment, on which no grant has taken place on or before the said date [1]

[42] Date of making available to the public by viewing, or copying on request, an examined document, on which no grant has taken place on or before the said date [1]

[43] Date of publication by printing or similar process of an unexamined document, on which no grant has taken place on or before the said date [1]

[44] Date of publication by printing or similar process of an examined document, on which no grant has taken place on or before the said date [1]

[45] Date of publication by printing or similar process of a document, on which grant has taken place on or before the said date

[46] Date of publication by printing or similar process of the claim(s) only of a document [1]

[47] Date of making available to the public by viewing, or copying on request, a document on which grant has taken place on or before the said date [1]

[50] *Technical information*

[51] International Patent Classification

[52] Domestic or national classification

[53] Universal Decimal Classification [1]

[54] Title of the invention

[55] Keywords [1]

[56] List of prior art documents, if separate from descriptive text

[57] Abstract or claim

[58] Field of search

[60] *Reference(s) to other legally related domestic document(s)* [2]

[61] Related by addition(s) [1]

[62] Related by division(s)

[63] Related by continuation(s)

[64] Related by reissue(s)

[70] *Identification of parties concerned with the document*

[71] Name(s) of applicant(s) [1]

[72] Name(s) of inventor(s) if known to be such [1]

[73] Name(s) of grantee(s)

[74] Name(s) of attorney(s) or agent(s) [1]

[75] Name(s) of inventor(s) who is(are) also applicant(s)

[76] Name(s) of inventor(s) who is(are) also applicant(s) and grantee(s)

Codes [75] and [76] are intended primarily for use by countries in which the national laws require that the inventor and applicant are normally the same. In other cases [71] and [72] or [71], [72] and [73] should generally be used.

Approved:

WILLIAM I. MERKIN,
Assistant Commissioner for Administration.

Nov. 21, 1972.

Notes concerning the application of INID Codes to U.S. patents:

[1] This item is either not applicable to U.S patents or, if applicable, is either not coded or not assigned this code.

[2] The respective specific data elements within this category are not individually coded. They are printed in a particular format under the caption "Foreign Application Priority Data" which is identified by the INID Code [30].

[3] The specific data applicable to a particular patent is printed under the caption "Related U.S. Application Data." Where the relationship is due solely to division or to continuation and/or continuation-in-part, the data is identified by the appropriate specific INID Code, i.e., [62] or [63], respectively. Where the relationship is due to any combination of these two specific sub-categories, the data is identified by use of the generic INID Code [60].

[905 O.G. 684]

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(218)

GSA PATENT LICENSING REGULATIONS FOR GOVERNMENT-OWNED INVENTIONS

The General Services Administration issued on January 29, 1973, regulations that will govern the granting of licenses, both exclusive and nonexclusive, under government-owned patents and patent applications. The regulations were promulgated pursuant to Section 2 of the August 23, 1971, Memorandum and Statement of Government Patent Policy issued by President Nixon, and will form new Subpart 101–4.1, Title 41, of the Code of Federal Regulations.

Each government agency is required by Section 101–4.104–1 of the regulations to cause lists of their inventions that are available for licensing to be published in the Federal Register, the Patent Office OFFICIAL GAZETTE, *and at least one other publication. In response to this requirement, the* OFFICIAL GAZETTE *will republish all such lists published in the Federal Register. Copies of listed patents are available from the Commissioner of Patents, Washington, D.C., 20231, for 50¢ each. Copies of patent applications, however, must be ordered from the National Technical Information Service (NTIS), Springfield, Virginia 22152. Also available from NTIS are two publications that include all patents and patent applications of the National Aeronautics and Space Administration that are available for licensing. These publications include abstracts of inventions which are listed by field of technology. The publications are entitled "NASA Patent Abstracts Bibliography," dated January 1972 and July 1972, and are identified as NASA SP–7039, Section 1, and NASA SP–7039(01), Section 1. Section 2 of both documents, representing a continuous indexing system, is also available.*

The GSA licensing regulations are republished below. Also republished are the various listings of government-owned patents and patent applications that have previously appeared in the Federal Register as available for licensing under these regulations. As additional listings are published in the Federal Register, they will be included in future issues of the OFFICIAL GAZETTE.

WILLIAM I. MERKIN,
Apr. 2, 1973. *Assistant Commissioner for Administration.*

Title 41—Public Contracts and Property Management

CHAPTER 101—FEDERAL PROPERTY MANAGEMENT REGULATIONS

SUBCHAPTER A—GENERAL

PART 101–4—PATENTS

Licensing of Government-Owned Inventions

This amendment of the Federal Property Management Regulations adds new Part 101–4, Patents, and new Subpart 101–4.1, Licensing of Government-Owned Inventions. The amendment sets forth regulations which implement the Presidential Statement of Government Patent Policy dated August 23, 1971. The statement specifically directs the General Services Administration to issue regulations which provide for the licensing and dedication of Government-owned inventions for the purpose of enhancing the utilization of such inventions. Development of the regulation was accomplished in cooperation with the Committee on Government Patent Policy, Federal Council for Science and Technology. Agency and industry comments were considered.

The table of contents for Subchapter A is amended to add new entries, as follows:

Subpart 101–4.1 Licensing of Government-Owned Inventions

Sec.

101–4.100	Scope of subpart.
101–4.101	Policy.
101–4.102	Definitions.
101–4.103	Types of licenses and conditions for licensing.
101–4.103–1	Government inventions available for licensing.
101–4.103–2	Nonexclusive license.
101–4.103–3	Limited exclusive license.
101–4.103–4	Additional licenses.
101–4.103–5	Royalties.
101–4.103–6	Reports.
101–4.104	Procedures.
101–4.104–1	Government agency publication requirements.
101–4.104–2	Contents of a nonexclusive license application.
101–4.104–3	Contents of an exclusive license application.
101–4.104–4	Published notices.
101–4.104–5	Modification or revocation.
101–4.104–6	Appeals.
101–4.105	Litigation.
101–4.106	Transfer of custody of Government inventions.

AUTHORITY: Sec. 205(c), 63 Stat. 390; 40 U.S.C. 486(c).

Part 101–4 is added as follows:

§ 101–4.100 Scope of subpart.

This subpart prescribes the terms, conditions, and procedures for the licensing of rights in domestic patents and patent applications vested in the United States of America, and for dedication of Government-owned inventions by a Government agency.

§ 101–4.101 Policy.

(a) A major premise of the Presidential Statement of Government Patent Policy, August 23, 1971 (36 FR 16887, August 26, 1971), is that Government-owned inventions normally will best serve the public interest when they are developed to the point of practical application and made available to the public in the shortest possible time. The granting of express nonexclusive or exclusive licenses for the practice of these inventions may assist in the accomplishment of the national objective to achieve a dynamic and efficient economy. However, it is recognized that there may be inventions as to which a Government agency deems dedication preferable to accomplish these objectives.

(b) The granting of nonexclusive licenses generally is preferable since the invention is thereby laid open to all interested parties and serves to promote competition in industry, if the invention is in fact promoted commercially. However, to obtain commercial utilization of the invention, it may be necessary to grant an exclusive license for a limited period of time as an incentive for the investment of risk capital to achieve practical application of an invention.

(c) Whenever the grant of an exclusive license is deemed appropriate, it shall be negotiated on terms and conditions most favorable to the public interest. In selecting an exclusive licensee, consideration shall be given to the capabilities of the prospective licensee to further the technical and market development of the invention, his plan to undertake the development, the projected impact on competition, and the benefit to the Government and the public. Consideration shall be given also assisting small business and minority business enterprises, as well as economically depressed, low income, and labor surplus areas, and whether each or any applicant is a U.S. citizen or corporation. Where there is more than one applicant for an exclusive license, that applicant shall be selected who is determined to be most capable of satisfying the criteria and achieving the goals set forth in this subpart.

(d) Subject to the following: (1) Specific statutes governing the utilization of patent rights of certain Government agencies, or (2) any existing or future treaty or agreement between the United States and any foreign government or intergovernmental organization, or (3) licenses under or other rights to inventions made or conceived in the course of or under Government research and development contracts where such licenses or other rights to such inventions are granted to or provided for in the contract and acquired by the party contracting with the Government agency, no license shall be granted or implied in a Government-owned invention except as provided for in this subpart.

(e) No grant of a license under this subpart shall be construed to confer upon any licensee any immunity from the antitrust laws or from a charge of patent misuse, and the acquisition and use of rights pursuant to this subpart shall not be immunized from the operation of State or Federal law by reason of the source of the grant.

§ 101–4.102 Definitions.

(a) "Government invention" means an invention covered by a domestic patent or patent application that is vested in the United States and is designated by the Government agency having custody of the invention as appropriate for the grant of an express nonexclusive or exclusive license.

(b) "To the point of practical application" means to manufacture in the case of a composition or product, to practice in the case of a process, or to operate in the case of a machine under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.

(c) "Government agency" means any executive department, independent commission, board, office, agency, administration, authority, wholly owned corporation, or other independent establishment of the executive branch of the Government of the United States of America.

(d) "The head of the Government agency" means the head of the agency or his designee.

§ 101–4.103 Types of licenses and conditions for licensing.

§ 101–4.103–1 Government inventions available for licensing.

Government inventions normally will be made available for the granting of express nonexclusive or limited exclusive licenses to responsible applicants according to the factors and conditions set forth in §§ 101–4.103–2 and 101–4.103–3, subject to the applicable procedures of § 101–4.104.

§ 101–4.103–2 Nonexclusive license.

(a) *Availability of licenses.* Each Government invention normally shall be made available for the granting of nonexclusive revocable licenses, subject to the provisions of any other licenses, including those under § 101–4.103–4.

(b) *Terms of grant.* (1) The duration of the license shall be for a period as specified in the license agreement, provided that the licensee complies with all the terms of the license.

(2) The license shall require the licensee to bring the invention to the point of practical appplication within a period specified in the license, or such extended period as may be agreed upon, and to continue to make the benefits of the invention reasonably accessible to the public.

(3) The license may be granted for all or less than all fields of use of the invention, and throughout the United States of America, its territories and possessions, the Commonwealth of Puerto Rico, and the District of Columbia, or in any lesser geographic portion thereof.

(4) After termination of a period specified in the license agreement, the Government agency may restrict the license to the fields of use and/or geographic areas in which the licensee has brought the invention to the point of practical application and continues to make the benefits of the invention reasonably accessible to the public.

(5) The license may extend to subsidiaries and affiliates of the licensee but shall be nonassignable without approval of the Government agency, except to the successor of that part of the licensee's business to which the invention pertains.

§ 101–4.103–3 Limited exclusive license.

(a) *Availability of licenses.* Each Government invention may be made available for the granting of a limited exclusive license provided that:

(1) The invention has been published as available for licensing pursuant to § 101–4.104–1 for a period of at least 6 months;

(2) The head of the Government agency has determined that (i) the invention may be brought to the point of practical application in certain fields of use and/or in certain geographical locations by exclusive licensing, (ii) the desired practical application has not been achieved under any nonexclusive license granted on the invention, and (iii) the desired practical application is not likely to be achieved expeditiously in the public interest under a nonexclusive license or as a result of further Government-funded research or development;

(3) The notice of the prospective licensee has been published, pursuant to § 101–4.104–4(a) for at least 60 days; and

(4) After termination of the period set forth in § 101–4.103–3(a)(3), the Government agency has determined that no applicant for a nonexclusive license has brought or will bring, within a reasonable period, the invention to the point of practical application as specified in the exclusive license, and that to grant the exclusive license would be in the public interest.

(b) *Selection of exclusive licensee.* An exclusive licensee shall be selected on bases consistent with the policy set forth in § 101–4.101 and in accordance with the procedures set forth in § 101–4.104.

(c) *Terms of grant.* (1) The license may be granted for all or less than all fields of use of the Government invention and throughout the United States of America, its territories and possessions, the Commonwealth of Puerto Rico, and the District of Columbia, or in any lesser geographic portion thereof.

(2) Subject to the rights reserved to the Government in §§ 101–4.103–3(c)(6) and 101–4.103–3(c)(7), the licensee shall be granted the exclusive right to practice the invention in accordance with the terms and conditions specified in the license.

(3) The duration of the license shall be negotiated but shall be for a period less than the terminal portion of the patent, the period remaining being sufficient to make the invention reasonably available for the grant of a nonexclusive license; and such period of exclusivity shall not exceed 5 years unless the head of the Government agency determines on the basis of a written submission supported by a factual showing that a longer period is reasonably necessary to permit the licensee to enter the market and recoup his reasonable costs in so doing.

(4) The license shall require the licensee to bring the invention to the point of practical application within a period specified in the license, or within a longer period as approved by the Government agency, and to continue to make the benefits of the invention reasonably accessible to the public.

(5) The license shall require the licensee to expend a specified minimum amount of money and/or to take other specified actions, within a specified period of time after the effective date of the license, in an effort to bring the invention to the point of practical application.

(6) The license shall be subject to the irrevocable royalty-free right of the Government of the United States to practice and have practiced the invention by or on behalf of the Government of the United States and on behalf of any foreign government or intergovernmental organization pursuant to any existing or future treaty or agreement with the United States.

(7) The license shall reserve to the Government agency the right to require

the licensee to grant sublicenses to responsible applicants on terms that are reasonable in the circumstances (i) to the extent that the invention is required for public use by Government regulations, or (ii) as may be necessary to fulfill health or safety needs, or (iii) for other public purposes stipulated in the license.

(8) The license may extend to subsidiaries and affiliates of the licensee but shall be nonassignable without approval of the Government agency, except to successors of that part of the licensee's business to which the invention pertains.

(9) An exclusive licensee may grant sublicenses under his license, subject to the approval of the Government agency. Each sublicense granted by an exclusive licensee shall make reference to the exclusive license, including the rights retained by the Government under the exclusive license, and a copy of such sublicense shall be furnished to the Government agency.

(10) The license may be subject to such other terms as may be in the public interest.

§ 101–4.103–4 Additional licenses.

Subject to any outstanding licenses, nothing in this subpart shall preclude a Government agency from granting additional nonexclusive or limited exclusive licenses for Government-owned inventions when the Government agency determines that to do so would provide for an equitable exchange of patent rights. The following exemplify circumstances wherein such licenses may be granted:

(a) In consideration of the settlement of an interference;

(b) In consideration of a release of a claim of infringement; or

(c) In exchange for or as part of the consideration for a license under adversely held patents.

§ 101–4.103–5 Royalties.

(a) Normally, royalties shall not be charged under nonexclusive licenses granted to U.S. citizens and U.S. corporations on Government inventions; however, the Government agency may require other considerations.

(b) An exclusive license on a Government invention may require the payment of royalties, and/or other considerations, when the licensing situation and the policy in § 101–4.101 considered together, indicate that it is in the public interest to do so.

§ 101–4.103–6 Reports.

A license shall require the licensee to submit periodic reports on his efforts to achieve practical application of the invention. The reports shall contain information within his knowledge, or which he may acquire under normal business practices, pertaining to the commercial use being made of the invention and other information which the Government agency may determine is pertinent to its licensing activities and is specified in the license.

§ 101–4.104 Procedures.

§ 101–4.104–1 Government agency publication requirements.

Each Government agency shall cause to be published in the FEDERAL REGISTER, the Official Gazette of the U.S. Patent Office, and at least one other publication that the Government agency deems would best serve the public interest, a list of the Government inventions in its custody available for licensing under the conditions specified in § 101–4.103. The list shall be revised periodically to include directly, or by reference to a previously published list, all inventions currently available for licensing. Other publications on inventions available for licensing are encouraged and may include abstracts, when appropriate, as well as information on the design, construction, use, and potential market for the inventions.

§ 101–4.104–2 Contents of a nonexclusive license application.

An application for a nonexclusive license under a Government invention should be addressed to the head of the Government agency having custody of the invention, and shall include:

(a) Identification of invention for which license is desired, including the patent application serial number or patent number, title and date, if known, and any other identification of invention;

(b) Name and address of the person, company, or organization applying for license and whether the applicant is a U.S. citizen or a U.S. corporation;

(c) Name and address of representative of applicant to whom correspondence should be sent;

(d) Nature and type of applicant's business;

(e) Source of information concerning the availability of a license on this invention;

(f) Purpose for which license is desired and a brief description of applicant's plan to achieve that purpose;

(g) A statement of the fields of use for which applicant intends to practice the invention; and

(h) A statement as to the geographic areas in which the applicant would practice the invention.

§ 101–4.104–3 Contents of an exclusive license application.

In addition to the information indicated in § 101–4.104–2, an application for an exclusive license shall include:

(a) Applicant's status, if any, in any one or more of the following categories: (1) Small business firm, (2) minority business enterprise, (3) location in a surplus labor area, (4) location in a low-income area, and (5) location in an economically depressed area;

(b) A statement of applicant's capability to undertake the development and marketing required to achieve the practical application of the invention;

(c) A statement describing the time, expenditure, and other acts which the

applicant considers necessary to achieve practical application of the invention and the applicant's offer to invest that sum to perform such acts if the license is granted;

(d) A statement that contains the applicant's best knowledge of the extent to which the Government invention is being practiced by private industry and the Government; and

(e) Any other facts which the applicant believes are evidence that it is in the public interest for the Government agency to grant an exclusive license rather than a nonexclusive license and that such exclusive license should be granted to the applicant.

§ 101–4.104–4 Published notices.

(a) A notice that a prospective exclusive licensee has been selected shall be published in the FEDERAL REGISTER, and a copy of the notice shall be sent to the Attorney General. The notice shall include:

(1) Identification of the invention;

(2) Identification of the selected licensee;

(3) Duration and scope of the contemplated license; and

(4) A statement to the effect that the license will be granted unless:

(i) An application for a nonexclusive license, submitted by a responsible applicant pursuant to § 101–4.104–2, is received by the Government agency having custody of the invention within 60 days from the publication of the notice in the FEDERAL REGISTER, and the Government agency determines in accordance with its prescribed procedures under which procedures the Government agency shall record and make available for public inspection all decisions made pursuant thereto and the basis therefor, that the applicant has established that he has already achieved or is likely to bring the invention to the point of practical application within a reasonable period under a nonexclusive license; or

(ii) The Government agency determines that a third party has presented evidence and argument which has established that it would not be in the public interest to grant the exclusive license.

(b) If an exclusive license has been granted pursuant to this Subpart 101–4.1, notice thereof shall be published in the FEDERAL REGISTER. Such notice shall include:

(1) Identification of the invention;

(2) Identification of the licensee; and

(3) Duration and scope of the license.

(c) If an exclusive license has been modified or revoked pursuant to § 101–4.104–5, notice thereof shall be published in the FEDERAL REGISTER. Such notice shall include:

(1) Identification of the invention;

(2) Identification of the licensee; and

(3) Effective date of the modification or revocation.

§ 101–4.104–5 Modification or revocation.

(a) Any license granted pursuant to this Subpart 101–4. 1 may be modified or revoked by the Government agency granting the license if the licensee at any time defaults in making any report required by the license or commits any breach of any covenant or agreement therein contained.

(b) A license may also be revoked by the Government agency granting the license if the licensee willfully makes a false statement of a material fact or willfully omits a material fact in the license application or any report required in the license agreement.

(c) Before modifying or revoking any license granted pursuant to this subpart for any cause, the Government agency shall furnish the licensee and any sublicensee of record a written notice of intention to modify or revoke the license, and the licensee and any sublicensee shall be allowed 30 days after such notice to remedy any breach of any covenant or agreement as referred to in (a) of this section or to show cause why the license should not be modified or revoked.

§ 101–4.104–6 Appeals.

An applicant for a license, a licensee, or such other third party who has participated under § 101–4.104–4(a)(4)(ii) shall have the right to appeal, in accordance with procedures prescribed by the Government agency, any decision concerning the granting, denial, interpretation, modification, or revocation of a license.

§ 101–4.105 Litigation.

An exclusive licensee shall be granted the right to sue at his own expense any party who infringes the rights set forth in his license and covered by the licensed patent. The licensee may join the Government upon consent of the Attorney General as a party complainant in such suit but without expense to the Government, and the licensee shall pay costs and any final judgment or decree that may be rendered against the Government in such suit. The Government shall have an absolute right to intervene in any such suit at its own expense. The licensee shall be obligated to furnish promptly to the Government, upon request, copies of all pleadings and other papers filed in any such suit and of evidence adduced in proceedings relating to the licensed patent including, but not limited to, negotiations or settlement and agreements settling claims by a licensee based on the licensed patent, and all other books, documents, papers, and records pertaining to such suit. If as a result of any such litigation the patent shall be declared invalid, the licensee shall have the right to surrender his license and be relieved from any further obligation thereunder.

§ 101–4.106 Transfer of custody of Government inventions.

A Government agency having custody of a Government-owned invention may enter into an agreement to transfer its custody to another Government agency

for purposes of administration, including the granting of licenses pursuant to this subpart.

Effective date. This subpart is effective May 7, 1973, but may be observed earlier. However, the head of a Government agency may exclude from the terms, conditions, and procedures set forth in this subpart any license that was in the process of being negotiated on the effective date.

Dated: January 29, 1973.

ARTHUR F. SAMPSON,
Acting Administrator of General Services.

[FR Doc.73-2119 Filed 2-2-73;8:45 am]

[909 O.G. 1171]

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(219) CHANGE IN LEGAL HOLIDAYS

Those doing business before the Patent Office are hereby reminded that by Public Law 90—363, 82 Stat. 250, effective January 1, 1971, Section 6103(a) of Title 5, United States Code, was amended to read as follows:

§ 6103. *Holidays*

(a) The following are legal public holidays:
New Year's Day, January 1.
Washington's Birthday, the third Monday in February.
Memorial Day, the last Monday in May.
Independence Day, July 4.
Labor Day, the first Monday in September.
Columbus Day, the second Monday in October.
Veterans Day, the fourth Monday in October.
Thanksgiving Day, the fourth Thursday in November.
Christmas Day, December 25.

Each of the holidays enumerated will constitute "a holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code.

Dec. 2, 1970. WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

[881 O.G. 1707]

EDITORIAL NOTE: Sec. 6103(c) states that January 20 of each fourth year after 1965, Inauguration Day, is also a legal public holiday.

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(220) OFFICE OF THE SECRETARY

[Dept. Organization Order 30-3A]

PATENT OFFICE

Organization and Functions

This order effective December 15, 1972, supersedes the material appearing at 27 FR 11469 of November 21, 1962.

SECTION 1. *Purpose.* This order delegates authority to the Commissioner of Patents and prescribes the functions of the Patent Office.

SEC. 2. *Status and line of authority.* .01 The Patent Office is hereby continued as a primary operating unit of the Department of Commerce. First established as an independent bureau under the direction of a Commissioner of Patents by the general revision of patent laws enacted by Congress July 4, 1836 (5 Stat. 117), it became a bureau of the Department of Commerce by Executive Order of April 1, 1925, in accordance with the authority contained in the act of February 14, 1903 (32 Stat. 830). When the patent laws were codified as Title 35, United States Code, effective January 1, 1953, the Patent Office was continued as an office in the Department of Commerce.

.02 The Commissioner of Patents (hereinafter called the Commissioner), who is appointed by the President by and with the advice and consent of the Senate shall be the head of the Patent Office. He shall be principally assisted by a Deputy Commissioner and four assistant commissioners, whose titles and status are specified below. The First Assistant Commissioner (Deputy Commissioner) and the first two assistant commissioners are provided for by 35 U.S.C. 3 and are appointed by the President by and with the advice and consent of the Senate.

a. The Deputy Commissioner (First Assistant Commissioner under 35 U.S.C. 3).

b. The Assistant Commissioner for Patents (an assistant commissioner under 35 U.S.C. 3).

c. The Assistant Commissioner for Trademarks (an assistant commissioner under 35 U.S.C. 3).

d. The Assistant Commissioner for Legal Affairs.

e. The Assistant Commissioner for Administration.

.03 The Deputy Commissioner or, in the event of a vacancy in that office, the assistant commissioner appointed under 35 U.S.C. 3 who is senior in date of appointment, shall act as Commissioner during a vacancy in that office until a Commissioner is appointed and takes office. In the absence of the Commissioner, the Deputy Commissioner shall act as Commissioner. If the Deputy Commissioner is likewise absent or that office is vacant, one of the assistant Commissioners appointed under 35 U.S.C. 3 or the Assistant Commissioner for Legal Affairs or the Solicitor of the Patent Office shall act as Commissioner in an order of precedence prescribed by the Commissioner.

.04 The Commissioner shall report and be responsible to the Assistant Secretary for Science and Technology.

SEC. 3. *Delegation of authority.* .01 Pursuant to the authority vested in the Secretary of Commerce by 35 U.S.C. 3 and Reorganization Plan No. 5 of 1950, the functions of the Patent Office and its officers specified in Title 35 of the United States Code, as amended, are hereby vested in the Secretary of Commerce and redelegated to the Commissioner of Patents.

.02 Pursuant to the authority vested in the Secretary of Commerce by law, the Commissioner of Patents is hereby delegated authority to perform the following functions vested in the Secretary of Commerce.

a. The functions in Title 15, Chapter 22 of the United States Code, which pertain to trademarks.

b. The functions in Executive Order 10096 of January 23, 1950, and the Executive Order 10930 of March 24, 1961, which pertain to inventions made by Government employees.

c. The functions in 42 U.S.C. 2181 and 2182, which pertain to inventions relating to atomic weapons, and in 42 U.S.C. 2457, which pertain to property rights in inventions made in performance of work under contract for the National Aeronautics and Space Administration.

d. Such functions under other authorities of the Secretary of Commerce as are applicable to performing the functions assigned in this order.

.03 Exercise of the functions delegated in paragraphs .01 and .02 of this section shall be subject to such policies or directions as may be prescribed by the Secretary of Commerce or the Assistant Secretary for Science and Technology.

.04 The Commissioner of Patents may, except as precluded by law or regulation, redelegate his authority to employees of the Patent Office subject to such conditions in the exercise of the delegated authority as he may prescribe.

SEC. 4. *Functions.* The Patent Office shall perform the following functions:

.01 Examine applications for patent to determine if they meet the requirements of law for the issuance of patents and, upon such determination, granting patents.

.02 Administer special laws and regulations as to secrecy of certain inventions, licenses for foreign filing, and those relating to atomic energy and space technology.

.03 Decide the ownership of patents and the rights to inventions made by Government employees, as provided by Executive Orders 10096 and 10930.

.04 Provide for the publication, storage, dissemination, and exchange of patents and related documentation.

.05 Maintain systems and facilites providing appropriate access to United States and foreign patents and other technical literature for use of the examiners and the public.

.06 Examine applications for the registration of trademarks to determine their entitlement to registration under the law; give public notice of trademarks allowed for regis-

tration and publish registered trademarks; maintain the principal and supplemental registers of trademark registrations, and provide for public access to such registers and related trademark records.

.07 Issue patents and certificates of trademark registration.

.08 Reissue defective patents and issue certificates of correction of patents and trademark registrations.

.09 Maintain records as to proprietary interests in patents and trademarks and applications therefor.

.10 Carry on or authorize studies and programs, separately or in coordination with other United States, foreign and international agencies, regarding domestic and international patent and trademark law.

.11 Perform other functions required, or which the Commissioner deems necessary and proper, in exercising the authority delegated herein.

Effective date: December 15, 1972.

GUY W. CHAMBERLIN, JR.,
Acting Assistant Secretary for Administration.

[FR Doc. 73-320; Filed 1-5-73; 8:45 am]

[Dept. Organization Order 30-3B]

PATENT OFFICE

Organization and Functions

This order effective December 15, 1972, supersedes the material appearing at 36 FR 9078 of May 19, 1971.

SECTION 1. *Purpose.* This order prescribes the organization and assignment of functions within the Patent Office. Department Organization Order 30-3A prescribes the scope of authority and functions.

SEC. 2. *Organization structure.* The principal organization structure and line of authority of the Patent Office shall be as depicted in the attached organization chart. A copy of the organization chart is attached to the original document on file in the Office of the Federal Register.

SEC. 3. *Office of the Commissioner.* The Commissioner determines the policies and directs the programs of the Patent Office and is responsible for the conduct of all activities of the Patent Office. He is principally assisted by Deputy Commissioner and four Assistant Commissioners who shall have the main duties as specified below:

a. The Deputy Commissioner (First Assistant Commissioner under 35 U.S.C. 3) shall assist the Commissioner in the direction of the Patent Office with immediate responsibility for the Office of Petitions and shall perform the duties of the Commissioner in the latter's absence.

b. The Assistant Commissioner for Patents (an assistant commissioner under 35 U.S.C. 3) shall provide administrative and policy direction for the patent examining and related operations which consist of the organizational elements enumerated in section 5 of this order. He is assisted by a Deputy Assistant Commissioner who shall, among other duties, have immediate responsibility for the patent examining groups and shall perform the duties of the Assistant Commissioner during the latter's absence.

c. The Assistant Commissioner for Trademarks (an assistant commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the trademark registration and related operations which consist of the organizational elements enumerated in section 6 of this order.

d. The Assistant Commissioner for Legal Affairs shall be the chief law officer of the Patent Office and as applicable shall provide administrative and policy direction to the organizational elements enumerated in section 7 of this order. Pursuant to Department Organization Order 10-6, he shall be subject to the overall authority of the Department's General Counsel with respect to legal and legislative matters involving the Patent Office, other than in connection with the issuance of patents or the registration of trademarks.

e. The Assistant Commissioner for Administration shall be the principal advisor to the Commissioner on the formulation and application of management policies and shall provide administrative, management, and operational support services to components of the Patent Office. In addition, he shall provide administrative and policy direction to a staff assigned to his office as well as to the organizational elements enumerated in section 8 of this order. He shall be assisted by a Deputy Assistant Commissioner who shall perform the duties of the Assistant Commissioner during the latter's absence.

SEC. 4. *Office reporting to the Commissioner.* .01 The Offices of Petitions shall receive, docket, maintain records, and take other appropriate action with respect to petitions to the Commissioner submitted under applicable law and regulations; assign petitions to appropriate officials for decision or recommend and prepare decisions for review and approval by the Deputy Commissioner; and recommend changes in office policy, practices, and procedures, where the need for such appears evident from the records of the office.

.02 The Office of Government Inventions and Patents shall administer Executive Order 10096, as amended by Executive Order 10930 and related regulations, including the rendering of final decisions on the ownership of patents and the rights to inventions made by Government employees, and advise the Commissioner on matters involving the Committee on Government Patent Policy (of the Federal Council for Science and Technology). It shall also conduct research, liaison, and coordinate functions needed to carry out Executive Order 10096 and to advise the Commissioner on Committee matters; provided executive secretariat support to the Committee; and assist in the development and formulation, to the extent appropriate, of a uniform Government-wide policy.

.03 The Office of Advanced Systems Development shall apply analytical basic research techniques to the development of new machine-assisted experimental search, retrieval, and display systems; to the exploration and application of advanced technology for the betterment of operating systems; and to increasing the effectiveness of technical information dissemination and accessing measures. This work is directed primarily to providing solutions to hitherto unresolved problems and to the development of experimental or test applications, for simulations of original techniques or operations. It shall assist in the installation, pilot use, and evaluation of experimental systems in operating environments.

.04 The Office of Information Services shall advise and represent the Commissioner on information matters; conduct programs fostering public understanding of the American patent system and the functions, services and administrative publications of the Patent Office; develop publication policies; provide direction and assistance in developing new and revised publications; and assure conformity with policies, regulations, and standards concerning publications and publication practices.

SEC. 5. *Offices reporting to the Assistant Commissioner for Patents.* .01 The Office of Patent Program Control shall develop procedures for and establish quality, quantity, and other performance standards relating to the conduct of the patent examination and classification functions; establish program activity targets and continually evaluate status against program objectives; provide training to examiners in patent practices and procedures; and monitor compliance with examination and classification standards and procedures.

.02 The Office of Patent Classification shall develop, implement, and maintain subject matter classification systems for patent search files of prior art; evaluate and adapt experimental or other search systems developed elsewhere; determine requirements for and initiate procurement of foreign patent and literature abstracting services for use by examiners; and provide technical specifications, guidance, advice, and assistance to the contracting officer in such procurements; coordinate the classification of U.S. and foreign patent documents and nonpatent literature; and participate in developing and fostering harmonization of the United States and the International Patent Classification systems.

.03 The Examining Groups shall examine applications for patents to ascertain if the applicants are entitled to patents under the law and grant patents to those so entitled. Each examining group shall perform this function for patent applications falling within the generic category assigned to it. The number of examining groups and the coverage of the generic categories shall be determined by the Commissioner.

SEC. 6. *Offices reporting to the Assistant Commissioner for Trademarks.* .01 The Office of Trademark Program Control shall develop guidelines governing trademark examining procedures; establish program activity targets and continually evaluate status against program objectives; and provide instruction in trademark practice and procedures and coordinate trademarks administrative support activities.

.02 The Trademark Trial and Appeal Board shall be responsible for hearing and deciding adversary proceedings

involving interfering applications, oppositions to registration, cancellations, and concurrent use proceedings; and for hearing and deciding appeals from final refusals of the trademark examiners to allow the registration of trademarks.

.03 The Trademark Examining Operation shall be responsible for the classification of trademark applications into classes of goods and services, the examination and processing of these applications, and the registration of trademarks, service marks, and certification marks; and maintain the principal and supplemental registers of trademarks.

SEC. 7. *Offices reporting to the Assistant Commissioner for Legal Affairs.* .01 The Office of the Solicitor shall handle all litigation to which the Commissioner is a party and provide other legal services, including advice and assistance on legislative matters, and maintenance of the law library.

.02 The Examiners-in-chief sitting as a Board of Patent Appeals shall be responsible for hearing and deciding appeals from adverse decisions of examiners upon applications for patents.

.03 The Board of Patent Interferences shall conduct patent interference proceedings and make final determinations in the Patent Office as to priority of invention. The Board shall also hear and decide questions concerning property rights in inventions in the atomic energy and space fields brought before it under the provisions of sections 2182 and 2456 (d) and (e) of title 42, U.S.C.

.04 The Office of Legislation shall develop recommendations and advise policy and action concerning matters which may require changes in the patent and trademark laws; review and prepare analysis of bills or drafts of legislation concerning patent or trademark matters received for technical appraisal; prepare legislative proposals and, after appropriate clearance, draft legislation and supporting documentation for clearance with the Department's Office of the General Counsel and the Office of Management and Budget, for consideration by the Congress; and maintain liaison with patent and trademark bar associations, industry, and others concerned with proposed and pending legislation.

.05 The Office of International Affairs shall coordinate the development of policy and program recommendations or positions respecting international patent and trademark affairs, including all proposed new or modified agreements under the Paris Union, Patent Cooperation Treaty, or like treaties; maintain liaison in such matters with the Office of the Secretary, the Department of State, and concerned elements of the public; and participate in negotiating patent and trademark matters in establishing international agreements and in the implementation of programs affecting Patent Office commitments or responsibilities in these areas.

SEC. 8. *Offices reporting to the Assistant Commissioner for Administration.* .01. Management Planning Organizations:

a. The Office of Budget shall formulate, interpret, and execute budgetary and fiscal policies; establish and maintain a comprehensive budget program collaborating with cost center officials in developing budget and fiscal plans; develop and present budget requests; allocate and maintain budgetary accountability of available funds; maintain external liaison in budgetary matters; and review and evaluate the fulfillment of budget-based program commitments.

b. The Office of Management and Organization shall plan and conduct studies designed to improve organization, methods, procedures, workflow, work measurement, managerial technicals, and resource utilization, or otherwise increase efficiency, effectiveness and economy of operations; develop and manage a system for the issuance of internal administrative orders and instructions; promote development of the Patent Office management improvement program and coordinate the collection, review and submission of reportable plans and accomplishments thereon; coordinate a program for the management and control of external reports; and make special studies as required.

c. The Office of Program Planning and Evaluation shall formulate plans for and coordinate the development of Patent Office-wide long and short range program objectives within the framework of budgetary constraints; define, project, and allocate the manpower and other resources required to achieve Patent Office-wide objectives; develop and monitor a management information system which prescribe code structures for and consolidates all administrative management systems into a single integrated data base to provide information designed to measure performance and achievement against planned objectives; and develop and issue a wide variety of timely internal analytical and interpretive reports to the managers of the Patent Office.

.02 Public service organizations:

a. The Office of Publications shall schedule and manage the processing and movement of allowed patent application files in procuring the creation of full patent text machine language data base and the composition and printing of weekly patent issues and related announcements in the OFFICIAL GAZETTE; provide requisition and scheduling services for trademark publications; monitor the quality or performance by contributing sources and maintain close liaison with U.S. Government Printing Office; and prepare and issue patent grants and periodic publications of patent indexes.

b. The Office of Patent and Trademark Services shall provide the materials and services offered directly to the public, many of which are provided on a fee basis. These shall include recording instruments that transfer property rights to patents and trademarks; furnishing copies of patents, trademark registrations, and office records to examiners, and others in the Office, as well as to the public; providing drafting services; and maintaining appropriate collections of pertinent technical and scientific information such as United States and foreign patents, periodicals, books, and other publications for use by the public. It shall also conduct an initial examination of patent applications for compliance with law and regulation as to form and certain matters of factual content; grant or deny a filing date based on such examination and forward to the Examining Groups those granted a filing date; acknowledge the acceptance or rejection of applications for examination; originate documentation of pending applications; initially assign accepted applications to units of the examining groups for examination; and maintain records on the status and location of all applications.

.03 Administrative service organizations:

a. The Office of Computer Services shall be responsible for providing data processing services to other elements of the Patent Office: This shall include the conduct of systems analysis and equipment evaluation studies directly related to the design and development of systems and programs for applications of computer techniques; preparation or procurement and testing of computer programs, and supplemental data processing services; operation of all general purpose ADP equipment including that which may be approved for use within another organization unit as an integral part of its operations; and maintenance of a comprehensive library of programs, including those developed or procured by other organization units.

b. The Office of Finance shall develop and maintain the financial accounting system of the Patent Office, perform accounting operations for the revenue, trust funds, and appropriation of the Patent Office, including maintenance of general accounts and related fiscal records, preparation of financial statements and reports, audit and certification of vouchers for payment, issuance of deposit account statements, initiation of action to collect amounts due the Patent Office, and administration of the payroll system and related employee accounts; and provide financial advice and opinions.

c. The Office of General Services shall plan and administer a broad Office-wide program of general services, including procurement control; property, space, and facilities management; communications, records, files, mail, and forms management; administrative printing; and clearance of all requirements involving contractual pocurements, including liaison with the Department, in connection therewith.

d. The Office of Personnel shall administer activities relating to recruitment, placement, employee relations, equal employment opportunity programs for employees, training and career development, incentive awards, performance rating, position classification and wage administration, group management relations, and various employee benefit programs.

.04 The Office of Technology Assessment and Forecast shall continually assess the status of technological activities in all countries; compare inventive activity in the United States relative to other nations; and forecast developments on a world-wide basis.

Effective date: December 15, 1972.

GUY W. CHAMBERLIN, JR.,
Acting Assistant Secretary for Administration.

[FR Doc. 73-321; Filed 1-5-73; 8:45 am]

Published in 38 F.R. 1068, Jan. 8, 1973

[907 O.G. 2]

(221) PATENT OFFICE

Organization and Functions

This order, effective August 1, 1973, amends the material appearing at 38 FR 1068 of January 8, 1973.

Department Organization Order 30–3B, dated December 15, 1972 is hereby amended as follows:

1. SEC. 7. *Offices reporting to the assistant commissioner for legal affairs.*

a. Paragraph .04 is amended to read:

.04 The *Office of Legislation and International Affairs* shall make studies and advise the Commissioner on policy and action concerning matters which may require legislation and on international patent and trademark matters; develop and direct the implementation of related programs; maintain liaison with the Office of the Secretary, the Department of State, and appropriate congressional committees; and conduct negotiations in technical patent and trademark matters in establishing or implementing international agreements.

b. Paragraph .05 is deleted.

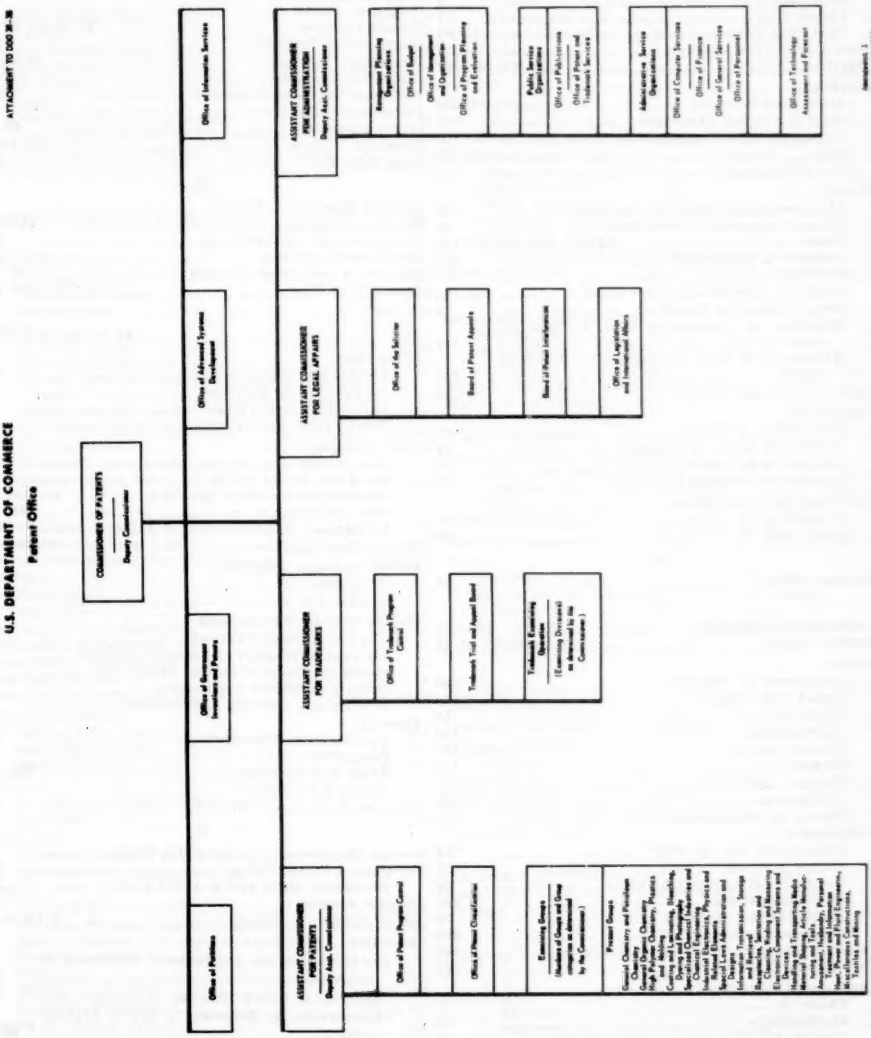
2. The organization chart of December 15, 1972 is superseded by the organization chart attached to this amendment. Copy of the Organization Chart is attached to the original of this document on file in the Office of the Federal Register.

Effective date: August 1, 1973.

HENRY B. TURNER,
Assistant Secretary for Administration.

[FR Doc. 73–19292; Filed 9–11–73; 8:45 am]

[915 O.G. 378]


ATTACHMENT TO DOO 30-3B
U.S. DEPARTMENT OF COMMERCE
Patent Office
COMMISSIONER OF PATENTS
Deputy Commissioner
Office of Petitions
Office of Government Inventions and Patents
Office of Advanced Systems Development
Office of Information Services
ASSISTANT COMMISSIONER FOR PATENTS
Deputy Asst. Commissioner
Office of Patent Program Control
Office of Patent Classification
Examining Groups
(Numbers of Groups and Group categories as determined by the Commissioner)
Patent Groups
ASSISTANT COMMISSIONER FOR TRADEMARKS
Office of Trademark Program Control
Trademark Trial and Appeal Board
Trademark Examining Operation
(Examining Divisions as determined by the Commissioner)
ASSISTANT COMMISSIONER FOR LEGAL AFFAIRS
Office of the Solicitor
Board of Patent Appeals
Board of Patent Interferences
Office of Legislation and International Affairs
ASSISTANT COMMISSIONER FOR ADMINISTRATION
Deputy Asst. Commissioner
Management Planning Organization
Office of Budget
Office of Management and Organization
Office of Program Planning and Evaluation
Public Service Organization
Office of Publications
Office of Patent and Trademark Services
Administrative Service Organization
Office of Computer Services
Office of Finance
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TRADEMARK SECTION

The following is a compilation of the more important notices and rule changes concerning trademarks which have been published in the OFFICIAL GAZETTE *from July 1, 1964 through December 31, 1974. Notices which have been rescinded are not included. Some notices issued prior to July 1, 1964, which have not been specifically rescinded and are still in effect, are not reproduced here.*

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(300) INTERVIEWS INVOLVING TRADEMARK APPLICATION

Interviews frequently result in a better understanding of the issues involved, shorten the prosecution and facilitate disposal of applications.

Interviews for discussion of registrability of the mark of a pending application will not be had before the first official Office action thereon and ordinarily not before filing the first response. Arrangements for an interview should be made in advance so that the Examiner may review the case and be familiar with the details involved.

Interviews on Friday will no longer be prohibited as a matter of policy but all interviews should be set at a time satisfactory to all parties concerned.

A memorandum summarizing the conclusions reached at the interview should be prepared by the Examiner and placed in the application file. The memorandum will be retained in the application file until the prosecution is completed. Such procedure will not, however, relieve the applicant of the responsibility of complying with the requirements of Trademark Rule 2.62.

HORACE B. FAY, JR.,
July 6, 1964. *Assistant Commissioner.*

This supersedes the notice of February 10, 1958, 728 O.G. (TM 1).

[804 O.G. TM 147 (July 28, 1964)]

(301) OPPOSITIONS UNDER SECTION 13 OF THE TRADEMARK ACT OF 1946

Section 13 of the Trademark Act of 1946 provides that any person who believes that he would be damaged by the registration of a mark upon the Principal Register may, upon payment of the required fee, file a verified opposition in the Patent Office, stating the grounds therefor, within thirty days after publication under Section 12(a) of the mark sought to be registered.

An unverified opposition may be filed by a duly authorized attorney, but the opposition will be null and void unless verified by the opposer within a reasonable time after such filing to be fixed by the Commissioner.

An opposition will not be accepted unless it complies with the statutory requirements, namely, it must be filed in the Patent Office within thirty days after publication under Section 12(a) of the mark opposed, be accompanied by a fee in the proper amount, must state the grounds therefor and, if filed by the opposer, must be verified.

A request to extend the time for filing an opposition under Rule 2.102 must be received in the Patent Office before the expiration of thirty days from date of publication under Section 12(a) of the mark sought to be registered. The request should specify the period of extension desired and be accompanied by a showing of good cause for the extension requested, but in the event circumstances do not permit submission of the showing of good cause with the request, it must be furnished within ten days after filing the request for extension.

Two or more parties may be joined in opposition to the registration of a mark, but separate fees for each party so joined must be paid. Likewise, a mark may be opposed in each of a plurality of classes, but a separate fee of $25.00 for each class in which opposition is sought, must accompany the opposition. To be complete, oppositions accompanied by fees insufficient to cover each class named in the application, must specify the particular classes in which opposition is sought.

HORACE B. FAY, JR,
July 15, 1964. *Assistant Commissioner.*

[805 O.G. TM 39 (Aug. 11, 1964)]

(302) CHANGE IN FORMAT FOR PUBLISHING TRADEMARKS FOR OPPOSITION

Section 30 of the Trademark Act of 1946 as amended by Public Law 772, 87th Congress, approved October 9, 1962,

76 Stat. 769, provides for the filing of a combined application for the registration of a trademark in more than one class.

The present practice of publishing the mark with pertinent data under each class in which registration is sought results in needless duplication.

Beginning with the issue of November 3, 1964, "Marks Published for Opposition" will be divided into two sections. In Section 1, all marks presented in combined applications for registration in more than one class will be published with only one reproduction of each mark.

The reproduction of the mark will be followed by the class numbers and titles, and under each class will appear the description of the goods in connection with which the trademark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

Trademarks presented in applications for registration in a single class will be published, as in the past, in class order, in Section 2.

The same procedure will be followed in the notice of the issuance of registrations on the Supplemental Register.

EDWIN L. REYNOLDS,
Sept. 18, 1964. *First Assistant Commissioner.*

[807 O.G. TM 51 (Oct. 13, 1964)]

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(303) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Allowance of Application

The following amendment is made, to take effect on publication in the Federal Register. Notice and public procedure and deferment of the time of taking effect are deemed unnecessary in view of the nature of the amendment, which is procedural only.

The purpose of the change is to eliminate the procedural step of signing a trademark application file prior to allowance, which has been found to be burdensome and which is unnecessary since the allowance of the application, subject to possible inter partes proceedings, has already been approved by an Examiner having full signatory authority.

Section 2.82 is amended by striking out the clause "the Examiner will sign the application file to indicate allowance and," so that the section as amended will read as follows:

§ 2.82 *Allowance of application.*

If no opposition is filed within the time permitted (§§ 2.101 and 2.102), or if filed and dismissed, and if no interference is declared, or concurrent use proceeding instituted, the application will be prepared for issuance of the certificate of registration as provided in § 2.151.

(Sec. 1, 66 Stat. 793, 35 U.S.C. 6; 60 Stat. 427, 15 U.S.C. 1057)

Dated: Mar. 23, 1966.

EDWARD J. BRENNER,
Commissioner of Patents.

Approved:
J. HERBERT HOLLOMAN,
Assistant Secretary for Science and Technology.

[F.R. Doc. 66-3785; Filed, Apr. 7, 1966; 8:45 a.m.]

Published in 31 F.R. 5554; Apr. 8, 1966

[826 O.G. TM 61 (May 10, 1966)]

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(304) PUBLICATION OF MATERIAL IN "NOTICES" SECTIONS OF PATENTS AND TRADEMARKS OFFICIAL GAZETTE

Effective Jan. 3, 1967, publication of material in the Patent and Trademark "Notices" sections of the OFFICIAL GAZETTE will occur only once.
Dec. 1, 1966.

[833 O.G. TM 108 (Dec. 20, 1966)]

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(305) POWERS OF ATTORNEY IN REGISTERED TRADEMARK FILES

On and after February 1, 1967, communications advising of changes in the powers of attorney for registered trademarks will be placed in the registration files, but will not be acknowledged by the Patent Office. The information will thus be available to those who inspect the files, but since these powers of attorney do not directly concern the Patent Office, acknowledgments are not believed to be necessary.

Jan. 30, 1967.

C. M. WENDT,
Director.

[835 O.G. TM 95 (Feb. 21, 1967)]

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(306) CHARGES AGAINST DEPOSIT ACCOUNTS UNDER SPECIAL CONDITIONS

The practice as to deposit accounts is hereby extended to include charges against deposit accounts under special conditions. Charges under this practice shall not exceed $50 for each trademark application, registration or notice of opposition.

The Director and the Assistant to the Director of the Trademark Examining Operation are authorized to make a charge against a deposit account provided prior approval, as by telephone, is obtained from the applicant, registrant, attorney or agent. This practice is limited to ex parte appeals to the Trademark Trial and Appeal Board, notices of opposition, affidavits under the provisions of Section 8, and applications for renewal and may be exercised only in emergency situations, such as where a party is unable to file the fee within the statutory period.

When such a charge is made, prior approval will be indicated in the file by identification of the name of the authorizing party, the date and the type of authorization, the purpose for which the charge is made, and the deposit account number.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

[879 O.G. TM 151 (Oct. 27, 1970)]

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(307) SEPARATION OF THE PATENT AND TRADEMARK SECTIONS OF THE OFFICIAL GAZETTE

Effective February 2, 1971, the OFFICIAL GAZETTE will be separated into two parts to be known as the *Patent Official Gazette* and the *Trademark Official Gazette*. The subscription prices for these publications are as follows:

Patent Official Gazette:
$89.00 per year
22.25 additional for foreign mailing
2.00 per single copy
Trademark Official Gazette:
$17.00 per year
4.25 additional for foreign mailing
.40 per single copy

Also effective February 2, 1971, the OFFICIAL GAZETTE will no longer contain "Decisions in Patent and Trademark Cases." Decisions of the type heretofore found in the "Decisions in Patent and Trademark Cases" are published by non-Federal organizations such as, for example, the Bureau of National Affairs, Inc., 1231 25th St. NW., Washington, D.C. 20037, and West Publishing Co., 50 Kellogg Blvd., St. Paul, Minn. 55102.

Finally, the "Decisions Leaflet" of the OFFICIAL GAZETTE will no longer be supplied as a separate subscription item after January 26, 1971. According to present plans, however, both the PATENT OFFICIAL GAZETTE and the TRADEMARK OFFICIAL GAZETTE will have identical "Patent Office Notices" sections containing notices of the various types heretofore published in the Gazette decision leaflet and Trademark Section. Those notices of particular interest to Patent Office employees will be accumulated and published approximately every fourth week, and distributed separately to employees.

WILLIAM E. SCHUYLER, JR.,
Dec. 29, 1970. *Commissioner of Patents.*

[882 O.G. TM 33 (Jan. 12, 1971)]

(308) PREFACE TO THE TRADEMARK O.G. NOTICES

In September 1970, a Public Advisory Committee for Trademark Affairs was established by the Secretary of Commerce. The Purpose of this Committee was to advise the Patent Office on ways to increase the efficiency and effectiveness of the administration of the Trademark Act. A report of this Advisory Committee has been received by the Commissioner of Patents. After reviewing the recommendations, although the review is not complete, it has been decided to make certain changes in trademark practice and procedure, and to propose changes in the rules of practice. Beginning with this issue of the OFFICIAL GAZETTE and in subsequent issues as needed, announcements will be published concerning changes in procedures and proposed amendments to the Trademark Rules of Practice.

* * * * *

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

[889 O.G. TM 2 (Aug. 3, 1971)]

(309) REQUEST FOR EXTENSION OF TIME IN WHICH TO OPPOSE

The Patent Office is adopting a new procedure to be used when filing a request for an extension of time in which to oppose under Section 13 of the Trademark Act and Rule 2.102, Trademark Rules of Practice. All requests for extension of time should be submitted in triplicate. The Patent Office will stamp each copy of the request with the action taken and send a copy to the requester and the applicant. The third copy will be entered in the file.

The purpose of this new procedure is to expedite the handling of extensions of time by eliminating the preparation of a formal notice of the disposition of the request. Further, this procedure will provide the applicant with additional information concerning the potential opposition.

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

[889 O.G. TM 3 (Aug. 3, 1971)]

(310) RECORDING OF DOCUMENTS AFFECTING TITLE

The Patent Office is liberalizing its policy concerning the recording of documents, other than assignments, which affect title to trademark registrations and applications. Under Rule 2.185 of the Trademark Rules of Practice, instruments affecting title to a trademark registration or application, and licenses of trademarks which are the subject of trademark registrations or applications, will be recorded even though the recording thereof may not serve as constructive notice under Section 10 of the Trademark Act of 1946, as amended (15 U.S.C. 1060).

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13231; July 16, 1971

[889 O.G. TM 2 (Aug. 3, 1971)]

(311) TRADEMARK EXAMINING PROCEDURE FOR AMENDED APPLICATIONS; REPORTING OLDEST DATES OF AMENDED TRADEMARK APPLICATIONS

Effective immediately, the order in which amendments to trademark applications are examined is changed. Previously, Examiners have usually acted on amended cases in order of filing date of the application which the amendment concerned, i.e., amended cases with the oldest filing date were examined first. Under the new procedure, amended cases will normally be examined in the order in which the amendment or other response is received, i.e., amendments that are received first will normally be examined first.

Effective with this issue of the OFFICIAL GAZETTE (Trademark Section) in order to reflect more accurately the condition of division dockets, the column reporting the date of the oldest amended application in each division has been changed to indicate the date of receipt of the oldest filed amendment. Under this new method of reporting the oldest date of receipt of a filed amendment upon which no action has been taken by an Examiner will be indicated for each division of the Trademark Examining Operation.

RENE D. TEGTMEYER,
July 15, 1971. *Assistant Commissioner.*

[889 O.G. TM 6 (Aug. 3, 1971)]

(312) ESTABLISHMENT OF MANUAL OF TRADEMARK EXAMINING PROCEDURE

Preliminary work has begun on the preparation of a Manual of Trademark Examining Procedure.

Directives on trademark examining procedure will be issued by the Patent Office from time to time and, when appropriate, will be included in the Manual at a later date. The directives will be numbered sequentially and those issued prior to publication of the Manual will be designated as Series 1. These directives will constitute the guidelines for the examination of trademark applications.

Trademark Examining Directives are available through the Superintendent of Documents, Washington, D.C., 20013 at an annual subscription of $1.50 plus 50¢ for foreign mailing.

ROBERT GOTTSCHALK,
July 27, 1971. *Acting Commissioner of Patents.*

[889 O.G. TM 226 (Aug. 31, 1971)]

(313) TRADEMARKS—STATUS INQUIRIES

In order to expedite the handling of inquiries regarding the status of both new and amended applications, the Patent Office has adopted a new procedure. Henceforth, status inquiries should be filed in duplicate and should identify by title and date the last paper known by the applicant to have been filed to the case. Each inquiry should be accompanied by a self-addressed, stamped envelope. The original inquiry will be entered in the file and the duplicate will be marked with a response and returned to the applicant. The date when the next office action can be expected will not be given unless specifically requested.

Status letters have been used by applicants to establish diligence in support of a later petition to revive should the application become abandoned. Under current practice, attorneys have frequently submitted status letters as a matter of course for such purposes. This has proved burdensome both to attorneys and the Patent Office. Until further notice, in new applications, the applicant will be considered to have exercised diligence in connection with a petition to revive an application abandoned for failure to respond to the initial office action if inquiry as to the status of the application is received by the Patent Office within either one of the two following periods, whichever expires later:

a. Eighteen months from the filing date of the application, or

b. A reasonable period after the OFFICIAL GAZETTE (Trademarks) indicates that the filing date of the oldest new case awaiting action in the Division to which the application is assigned is more recent than the filing date of the application.

For amended cases, the applicant will be considered to have exercised diligence if inquiries as to the status of the application are received by the Patent Office within either one of the two following periods, whichever expires later:

a. Eighteen months after filing a response to the examiner's last received action, or

b. A reasonable period after the OFFICIAL GAZETTE (Trademarks) indicates that the date of the oldest amendment filed that is awaiting action in the Division to which the application is assigned is more recent than the date of filing the last amendment to the application.

It should be noted as an exception to the above that status inquiries are totally unnecessary during period(s) of time when an application is suspended pursuant to 37 CFR 2.67.

Applicants are urged not to file status inquires within the first year after filing due to the current backlog of new applications.

Dated: July 28, 1971.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

Approved: July 30, 1971.
JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-11532; Filed 8-10-71; 8:48 am]

Published in 36 F.R. 14771, Aug. 11, 1971

[890 O.G. TM 5 (Sept. 7, 1971)]

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(314) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER 1—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Recognition of Attorneys and Agents, Standards of Conduct, and Patent Application Petitions

These rules changes eliminate present provision for the recognition and registration of firms of attorneys and agents for practice in patent and trademark cases, and permit registered attorneys and agents to file papers in patent applications without the need for filing powers of attorney or authorizations. The changes further establish the Code of Professional Responsibility of the American Bar Association as the standard of conduct for those practicing before the Patent Office insofar as the Code is not inconsistent with Patent Office rules. Other changes eliminate the present requirement for a petition or other express request for a patent and liberalize requirements as to inventor names.

The changes relating to the discontinuance of the recognition and registration of firms are intended to obviate problems incident to such registration such as, for example, the lack of certainty as to the responsibility of individual attorneys and agents for actions taken by registered nonpartnership business entities, such as professional corporations, the problems associated with the rights to firm names and registration numbers upon dissolution or reorganization of firms, and the recognition as "firms" of groups of attorneys or agents, such as parts of corporation organizations, when the attorneys and agents are not in fact associated as partners. Acceptance of papers filed in patent applications by registered attorneys and agents upon a representation that the attorney or agent is authorized to act in a representative capacity is for the purpose of facilitating responses on behalf of applicants in patent applications, and, further, to obviate the need for filing powers of attorney or authorizations of agent in individual applications when there has been a change in composition of law firms or corporate patent staffs. Interviews with a registered attorney or agent not of record will, in view of 35 U.S.C. section 122, be conducted only on the basis of information and files supplied by the attorney or agent.

Provision is made for an applicant to supply an address to receive correspondence from the Patent Office concerning his application, in addition to his residence address, so that the Patent Office may direct mail to any address of applicant's selection, such as a corporate patent department, a firm of attorneys or agents, or an individual attorney, agent, or other person. In connection with patent applications pending upon the effective date of the changes in which a firm is the only representative of record (and in connection with divisions and continuations thereof not requiring execution by the applicant), the address of the firm will be considered to be the correspondence address for the application. Powers of attorney and authorizations of agent in favor of registered individual attorneys and agents will, of course, continue to be recognized and accepted.

The amendments to §§ 1.344 and 2.13 are intended to provide a more definite and uniform standard of conduct for those engaged in practice before the Patent Office than do present rules. The Code of Professional Responsibility of the American Bar Association is incorporated by reference in the rule with a statement as to where copies thereof may be inspected or obtained. The rule specifies that the standards referred to are those set forth in the Code of Professional Responsibility as amended February 24, 1970, and the rule does not, therefore, refer to standards imposed by later amendments of the Code. Any standards in other Patent Office rules which are inconsistent with standards imposed by the Code (as, for example, the limitations in § 1.345(b) on the distribution of professional announcements and the duties imposed by § 1.205(b)) remain in force.

The elimination of the requirement for a petition requesting the grant of a patent and the relaxation of requirements as to the names of applicants are intended to simplify patent application procedures. Section 1.76 is being revoked as redundant in view of revisions in § 1.57.

Notice of proposed rule making regarding revocation of §§ 1.35 and 1.61 and revision of §§ 1.14, 1.21, 1.33, 1.34, 1.36, 1.51, 1.52, 1.57, 1.76, 1.341, 1.343, 1.344, 1.346, 1.347, 2.13, and 2.15 of Title 37, Code of Federal Regulations was published in the Federal Register of January 15, 1971 (36 F.R. 611). Interested persons were given an opportunity to participate in the rulemaking process through submission of comments in writing and at an oral hearing held on March 23, 1971. The rules are being adopted after full and careful consideration of all the material submitted. The departures from the published text reflect certain of the views expressed in the submitted material.

Effective date. This revision shall become effective on the date of its publication in the Federal Register (7-2-71).

In consideration of the comments received and pursuant to the authority contained in Section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), and Section 31 of that Act (66 Stat. 795; 35 U.S.C. 31), Title 37 of the Code of Federal Regulations is hereby amended as follows:

* * * * *

18. Section 2.13 is revised to read as follows:

§ 2.13 *Professional conduct.*

Attorneys and other persons appearing before the Patent Office in trademark cases must conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association as amended February 24, 1970, insofar as such code is not inconsistent with this part. A copy of the said code is available for inspection in the Office of the Solicitor, U.S. Patent Office, Room 11C04, Building 3, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Va. Copies of the code are available upon request to the American Bar Center, 1155 East 60th Street, Chicago, Ill. 60637.

19. Section 2.15 is revised to read as follows:

§ 2.15 *Signature and certificate of attorney or agent.*

Every paper filed by an attorney at law or other person representing an applicant or party to a proceeding in the Patent Office must bear the signature of such attorney at law or other person except those papers which are required to be signed by the applicant or party. The signature of an attorney at law or such other person to a paper filed by him, or the filing of any paper by him, constitutes a certificate that the paper has been read; that its filing is authorized; that to the best of his knowledge, information, and belief there is good ground to support it; and that it is not interposed for delay.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved:
JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-9387; Filed 7-1-71; 8:49 am]

Published in 36 F.R. 12616; July 2, 1971

[890 O.G. TM 60 (Sept. 14, 1971)]

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(315) STATUS INQUIRIES: AMENDMENT

The notice entitled Status Inquiries which appeared in the Federal Register of August 11, 1971 (36 F.R. 14771-14772), indicated that all status inquiries regarding trademark applications will be entered in the application files. That pro-

cedure will not, however, be followed in all cases, and the first paragraph of the notice has, accordingly, been amended to read as follows:

"In order to expedite the handling of inquiries regarding the status of both new and amended applications, the Patent Office has adopted a new procedure. Henceforth, status inquiries should be filed in duplicate and should identify by title and date the last paper known by the applicant to have been filed in the case. Each inquiry should be accompanied by a self-addressed, stamped envelope. Both the original inquiry and the duplicate will be marked with a response and the duplicate will be returned to the applicant. The original inquiry will be entered in the file only if the applicant has requested an estimated date for the next Office action; otherwise, the original inquiry will be placed in a separate file."

Dated: Sept. 14, 1971.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

[FR Doc. 71-14129; Filed 9-23-71; 8:50 a.m.]

Pub. in 36 F.R. 18961, Sept. 24, 1971

[891 O.G. TM 142 (Oct. 26, 1971)]

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(316) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Access to Pending Applications

A proposal was published at 36 F.R. 16194 to amend § 2.27 by deleting the requirement to show good cause in order to obtain access to a pending application file.

After consideration of all comments and suggestions submitted by interested persons, the amendment as proposed is hereby adopted, subject to the following changes:

1. The title of § 2.27 is changed by inserting the word "trademark" after the word "pending."

2. In paragraph (b) of § 2.27 the word "trademark" after the word "pending" is deleted.

Access to a pending application will be granted upon oral request at the office of the Director of the Trademark Examining Operation. The files will be ordered at 2 p.m. each day and will usually be available for inspection by 3 p.m. the same day. Files must be inspected in the presence of office personnel and papers may not be removed without authorization. Copies of the contents of files may be made only in the Trademark Search Room or by the Document Service Branch. Written requests for copies of the contents of application files may be addressed to the Document Service Branch; the cost is 30 cents per page.

The procedure for access to published and registered files and terminated inter partes proceedings will remain unchanged. Access to a published application is granted by request in the Trademark Docket Section. In order to obtain access to a registered file or terminated inter partes proceeding, an order must be placed in the Trademark Docket Section. These files are available either the same day or the morning of the following day.

Effective date. This amendment is effective on the date of its publication in the Federal Register (12-31-71).

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

December 21, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

December 22, 1971.

The text of the revised section is as follows:

§ 2.27 *Pending trademark application index; access to applications.*

(a) An index of pending applications including the name and address of the applicant, a reproduction or description of the mark, the goods or services with which the mark is used, the class number, the dates of use and the serial number and filing date of the application will be available for public inspection as soon as practicable after filing.

(b) Access to the file of a particular pending application will be permitted prior to publication under § 2.81 upon written request.

(c) Decisions of the Commissioner and the Trademark Trial and Appeal Board in applications and proceedings relating thereto are published or available for inspection or publication.

(d) After a mark has been registered, or published for opposition, the file of the application and all proceedings relating thereto are available for public inspection and copies of the papers may be furnished upon paying the fee therefor.

[F.R. Doc. 71-19801; Filed 12-30-71; 8:45 a.m.]

Published in F.R. 24506, Dec. 31, 1971

[895 O.G. TM 2 (Feb. 1, 1972)]

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(317) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Trademark Application and Drawing Requirements

A proposal was published at 36 F.R. 18002 to amend and revise §§ 2.21–2.23, 2.52, and 2.56. Pursuant to this notice, a number of comments have been received from interested persons. In light of the comments submitted, some changes have been made in the rules as proposed.

An additional subparagraph has been added to § 2.21 requiring that the application state the name of the applicant. In the same section, a paragraph (c) has been added. This paragraph incorporates the substances of proposed § 2.22. Section 2.52 has been revised to state that drawings must be 8 to 8½ inches wide and 11 inches long. In view of the change in § 2.52, § 2.31 has also been revised to make it clear that applications submitted on either letter or legal-size paper are acceptable.

Effective date. This revision shall become effective on *February 1, 1972.* However, as to § 2.52, drawings which comply only with the existing rule will be accepted until March 1, 1972.

1. Section 2.21 is revised to read as follows:

§ 2.21 *Requirements for receiving a filing date.*

(a) Materials submitted as an application for registration of a mark will not be accorded a filing date as an application until all of the following elements are received:

(1) Name of the applicant;

(2) A name and address to which communications can be directed;

(3) A drawing or other identification of the mark sought to be registered;

(4) An identification of goods or services;

(5) At least one specimen or facsimile of the mark as actually used;

(6) A date of first use of the mark in commerce, or a certification or certified copy of a foreign registration if the application is based on such foreign registration pursuant to section 44(e) of the act, or a claim of the benefit of a prior foreign application in accordance with section 44(d) of the act;

(7) The required filing fee for at least one class of goods or services.

Compliance with one or more of the rules relating to the elements specified above may be required before the application is further processed.

(b) The filing date of the application is the date on which all of the elements set forth in paragraph (a) of this section are received in the Patent Office.

(c) If the papers are so defective that they cannot be accepted, the applicant will be notified and the papers and fee held 6 months. If the requirements for receiving a filing date have not been satisfied within such time, the papers and fee will be returned to the applicant or otherwise disposed of; the drawing or fee of an unaccepted application may be transferred to a later application.

§ 2.22 [*Revoked*]

2. Section 2.22 is revoked.

3. Section 2.23 is revised to read as follows:

§ 2.23 *Serial number.*

Applications will be given a serial number as received, and the applicant will be informed of the serial number and the filing date of the application.

4. Section 2.31 is revised to read as follows:

§ 2.31 *Application must be in English.*

The application must be in the English language and plainly written on but one side of the paper. It is deemed preferable that the application be on legal or letter-size paper, typewritten double spaced, with at least a one and one-half inch margin on the left-hand side and top of the page.

5. Section 2.52 is amended by revising paragraph (c) to read as follows:

§ 2.52 *Requirements for drawings.*

* * * * *

(c) *Size of paper and margins.* The size of the sheet on which a drawing is made must be 8 to 8½ inches wide and 11 inches long. One of the shorter sides of the sheet should be regarded as its top. When the figure is longer than the width of the sheet, the sheet should be turned on its side with the top at the right. The size of the mark must be such as to leave a margin of at least 1 inch on the sides and bottom of the paper and at least 1 inch between it and the heading.

* * * * *

6. Section 2.56 is revised to read as follows:

§ 2.56 *Specimens.*

The application must include five specimens of the trademark as actually used on or in connection with the goods in commerce. The specimens shall be duplicates of the actual used labels, tags, or containers, or the displays associated therewith or portions thereof, when made of suitable flat material and of a size not to exceed 8½ inches wide and 13 inches long.

Dated: January 11, 1972.

RICHARD A. WAHL,
Acting Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary
for Science and Technology.

[FR Doc. 72-924; Filed 1-20-72; 8:48 am]

Published in 37 FR 931; Jan. 21, 1972

[895 O.G. TM 193 (Feb. 22, 1972)]

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(318) INITIAL PROCESSING OF APPLICATIONS

On February 1, 1972, the operations of the Trademark Application Section of the Patent Office will be reorganized. The purpose of the reorganization is to provide the public and applicants with more current information concerning newly filed applications.

The prompt initial processing of trademark applications is necessary in order to fulfill one of the main Patent Office functions, that of producing a record, accessible to the public, of new trademark activity to facilitate the clearance of new marks for use, determine the registrability of proposed marks, and avoid conflicts with the rights of others. In order to maintain a record of marks applied for which reflects the most current information available to the Office concerning them, the early processing of drawings in order to have them placed in the search room is considered as a first priority. The processing of these drawings includes the assignment of serial numbers, initial classification, duplication of the drawing and the forwarding of copies of the drawing to the search room. Other functions which are necessary in the processing of applications, such as the processing and mailing of filing receipts, are secondary to the processing of drawings.

In past years, there have been delays in processing applications and forwarding application drawings to the search room. These delays have varied from several weeks to several months. In view of the importance, both to applicants and the public, of recording essential information concerning newly filed applications as quickly as possible, a reorganization of the workflow in the Application Section is being effected.

There is no change in the processing of applications through the mail room and finance branch to the Application Section. However, under the new plan, upon receipt in the Trademark Application Section, all applications will be stamped with a serial number, and the drawing of the mark will be reproduced immediately and placed in the search file. This processing will occur as soon as the application files reach the Application Section. Such procedures as determining whether or not an application will receive a filing date, preparation of the file jackets, and mailing of the filing receipt will take place at a later time.

Applicants who wish to be notified promptly of the date their papers were received in the office and their serial number, may send two self-addressed postcards with their application papers. The mail room will stamp both postcards with the date of receipt and return one to the applicant; the second postcard will be stamped with the serial number and forwarded to the applicant from the Application Section. The postcards should contain the applicant's name and the trademark which is the subject of the application. When more than one set of application papers are forwarded under one cover, postcards should be attached to each set of papers for which a receipt is desired.

Under the new system of processing application papers, your particular attention is directed to the following changes as compared to the present procedure.

1. Application drawings will be placed in the public search file prior to the mailing of the filing receipt.

2. By using the postcard system described above, applicants will be notified sooner of the date of receipt of their papers and the serial number of their application. Applicants are encouraged to use the postcard system.

3. Additional papers sent in by the applicant or attorney should be identified by serial number, thereby enabling the office to process these papers quickly.

4. When an application is accompanied by a petition to the Commissioner under § 2.146, the petition will not be considered until processing by the Application Section is complete.

Effective date. The procedure outlined in this notice will become effective February 1, 1972.

RICHARD A. WAHL,
Acting Commissioner of Patents.

January 11, 1972.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for
Science and Technology.

[FR Doc. 72-925; Filed 1-20-72; 8:48 am]

Published in 37 FR 942; Jan. 21, 1972

[895 O.G. TM 193 (Feb. 22, 1972)]

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(319) IDENTIFICATION OF GOODS AND SERVICES IN TRADEMARK APPLICATIONS—(REPRINT OF NOTICE AND AMENDMENT)

Effective immediately, the Alphabetical List of Goods and Services which appears in the volume entitled "International Classification of Goods and Services to Which Trade Marks Are Applied" (published by the World Intellectual Property Organization (WIPO)) is adopted as a general guideline for determining the degree of particularity of identification of goods and services required in trademark applications.

Terms which appear in the International Classification listing will generally be accepted as proper identifications of goods and services. The use in the listing of more specific identifications indented below the heading term does not necessarily preclude acceptability of that heading. For example, the International Classification lists, as Item A407, *Ammunition,* followed by specific types of ammunition, as Items A408 and A409 and A410. "Ammunition" will be accepted as an identification in accordance with *In re Dynamit Nobel AG,* 169 USPQ 499 (TTAB, 1971). However, if the more specific term is used whenever appropriate, prosecution of the application may be shortened since the possibility of a requirement of greater particularity (see below) is reduced.

Greater particularity than is set forth by the terms in the International Classification listing may not be required by the Examiner in the absence of a clear need therefor. Typical

illustrations of clear need can be found in the following situations:

(1) The broad term includes items which are classified in more than one class. (For example, "artists' materials.")

(2) The broad term is too indefinite for proper examination. (For example, "metallic parts.")

(3) (*a*) The identification is inconsistent with the goods or services disclosed by the specimens.

(*b*) The ordinary meaning of the identification is at variance with the goods or services disclosed by the specimens or the record. (For example, "decalcomanias" are not adequately identified by the term "publications." See also *Ex parte Consulting Publishing Co.*, 115 USPQ 240.)

(4) Wording included in the mark requires limitation of the identification. (For example, "beer" may not be included in the identification where the mark is "Newark 'Olde Town' Ale" (*Ex parte Consumers Brewing Co.*, 55 USPQ 426).)

On the other hand, some situations do *not* constitute clear need, as illustrated by the following:

(1) The existence of a decision holding that a likelihood of confusion exists in relation to items which are narrowly identified does not in itself constitute a clear need to require amendment of a broad identification to the more specific items mentioned in the decision.

(2) If the identification is understood when read in association with the title of the class in which it is placed and is otherwise satisfactory, further qualifying amendment should not be required. (For example, "mufflers" in the clothing class would not require further modification to indicate that articles of clothing are intended; similarly the term "house organ" in the class for printed publications would not need further qualification.)

In a few instances, the terminology in the International Classification of Goods and Services is not in common usage in the United States. Where this occurs, the term more commonly used in this country should be selected.

The English edition of the "International Classification of Goods and Services to Which Trade Marks Are Applied" can be ordered from:

Sales Branch, The Patent Office
Block C, Station Square House
St. Mary Cray, Orpington, Kent, England

Certain modifications and additions to the Classification have been published as supplements and are also available from the British Office.

We have been advised by the British Patent Office that the only acceptable methods of payment are by International Money Order or banker's draft, payable in sterling and drawn on a bank in the United Kingdom. Orders for the International Classification and for the supplements can be made by remittance in the following amount(s):

International Classification	50 pence
Nov. 15, 1967, supplement	5 pence
Mar. 18, 1970, supplement	Free
Mar. 3, 1971, supplement	10 pence
Total cost (including postage by surface mail)	65 pence
Additional charge for postage by air mail	1 pound 55 pence
Total cost by airmail	2 pounds 20 pence

Orders should be sent directly to:

Sales Branch, The Patent Office, Block C.
Station Square House, St. Mary Cray,
Orpington, Kent, England

RENE D. TEGTMEYER,
Assistant Commissioner for Appeals, Legislation and Trademarks.

Date: Jan. 13, 1972.

[895 O.G. TM 54 (Feb. 8, 1972)]

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(320) TRADEMARK OFFICE ACTIONS

Effective Apr. 1, 1972, trademark applicants or their attorneys will be provided with only one carbon copy of any office action, and the mailing of an additional carbon copy will be discontinued.

This change is consistent with the current practice in the patent examining operations and should result in greater efficiency in the preparation and mailing of office actions.

ROBERT GOTTSCHALK,
Feb. 7, 1972. *Commissioner of Patents.*

[895 O.G. TM 238 (Feb. 29, 1972)]

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(321) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Interferences

A proposal was published at 36 F.R. 18002 to amend, revise, or redesignate §§ 2.27, 2.61, 2.80–2.82, 2.91, 2.92, 2.98, 2.101, and 2.103. Pursuant to this notice, a number of comments have been received from interested persons, and due consideration has been given to all matter presented. Only editorial changes have been made in the rules as proposed.

Effective date. This revision shall become effective on March 1, 1972, and will apply to all applications except those in which a notice of publication was mailed prior to March 1, 1972.

§ 2.27 [*Amended*]

1. Section 2.27 is amended by changing "2.81" in paragraph (b) to read "2.80."

§ 2.61 [*Amended*]

2. Section 2.92(c) is redesignated as § 2.61(c).

3. Section 2.81 is redesignated as § 2.80 and revised to read as follows:

§ 2.80 *Publication for opposition.*

If, on examination or reexamination of an application for registration on the Principal Register, it appears that the applicant is entitled to have his mark registered, the mark will be published in the OFFICIAL GAZETTE for opposition. The mark will also be published in the case of an application to be placed in concurrent use proceedings, if otherwise registrable.

§§ 2.81, 2.82 [*Redesignated*]

4. Sections 2.82 and 2.83 are redesignated as §§ 2.81 and 2.82, respectively.

5. A new § 2.83 is added and reads as follows:

§ 2.83 *Conflicting marks.*

(a) Whenever an application is made for registration of a mark which so resembles another mark or marks pending registration as to be likely to cause confusion or mistake or to deceive, the mark with the earliest effective filing date will be published in the OFFICIAL GAZETTE for opposition if eligible for the Principal Register, or issued a certificate of registration if eligible for the Supplemental Register. A notice will be sent, if practicable, to the applicants involved informing them of the publication or issuance of the earliest filed mark.

(b) In situations in which conflicting applications have the same effective filing date, the application with the earliest date of execution will be published in the OFFICIAL GAZETTE for opposition or issued on the Supplemental Register. A notice will be sent, if practicable, to the applicants involved informing them of the publication or issuance of the application with the earliest date of execution.

(c) Action on the conflicting application which is not published in the OFFICIAL GAZETTE for opposition or not issued on the Supplemental Register will be suspended by the Examiner of Trademarks until the published or issued application is registered or abandoned.

6. The heading for §§ 2.91–2.99 entitled "Interferences" is revised to read "Interferences and Concurrent Use Proceedings."

7. Section 2.91 is revised to read as follows:

§ 2.91 *Interferences.*

(a) An interference will not be declared between two applications or between an application and a registration except upon petition to the Commissioner. Interferences will be declared by the Commissioner only upon a showing of extraordi-

nary circumstances which would result in a party being unduly prejudiced without an interference. In ordinary circumstances, the availability of an opposition or cancellation proceeding to the party will be deemed to remove any undue prejudice.

(b) Registrations and applications to register on the Supplemental Register, registrations under the Act of 1920, and registrations of marks the right to use of which has become incontestable are not subject to interference.

8. Section 2,92 is revised to read as follows:

§ 2.92 *Preliminary to interference.*

Before the declaration of an interference, the marks which are to form the subject matter of the controversy must have been decided to be registrable by each party except for the interfering mark.

9. Section 2.98 is revised to read as follows:

§ 2.98 *Adding party to interference.*

If, during the pendency of an interference, another case appears involving substantially the same registrable subject matter, the Examiner of Trademarks may request the suspension of the interference for the purpose of adding said case. Such suspension will be granted as a matter of course if no testimony has been taken. If any testimony has been taken or is about to be taken, the case will not be added except upon approval of a member of the Trademark Trial and Appeal Board. If the case is not added, the Examiner of Trademarks may suspend action on such case pending termination of the interference proceeding.

§ 2.101 [*Amended*]

10. Section 2.101 is amended by changing "2.81," to read "2.80."

§ 2.103 [*Amended*]

11. Section 2.103 is amended by changing "2.81" in the second sentence to read "2.80."

Dated: February 2, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72-1863; Filed 2-8-72; 8:46 am]

Pub. 37 F.R. 2880, Feb. 9, 1972

[896 O.G. TM 2 (Mar. 7, 1972)]

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(322) TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Miscellaneous Amendments

A proposal was published at 36 F.R. 19315 to revise §§ 2.54, 2.67, 2.87, 2.88, and 2.187. Pursuant to this notice, comments have been received from interested persons. Full consideration has been given to all matter presented and changes in the text of the original proposal have been made in view thereof.

Section 2.54 is being revised to permit the Patent Office to accept substitute drawings in appropriate situations.

The revision of § 2.67 clarifies the situations in which an examiner may suspend action on an application.

Sections 2.87 and 2.88 are being revised to state that both goods and services may be the subject of a single application or certificate of registration in accordance with section 30 of the Trademark Act of 1946. Additionally, § 2.87 requires five specimens be submitted for each class.

The revision to § 2.187 insures that the certificate of registration issues to the current owner of the mark.

Effective date. This revision shall become effective March 17, 1972.

In consideration of the foregoing and pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is hereby amended as follows:

1. Section 2.54 is revised to read as follows:

§ 2.54 *Informal drawings.*

A drawing not in conformity with §§ 2.51 to 2.53 may be accepted for purpose of examination, but the drawing must be corrected or a new one furnished, as required, before the mark can be published or the application allowed. The necessary corrections will be made by the Patent Office upon applicant's request and at his expense.

2. Section 2.67 is revised to read as follows:

§ 2.67 *Suspension of action by the Patent Office.*

Action by the Patent Office may be suspended for a reasonable time for good and sufficient cause. The fact that a proceeding is pending before the Patent Office or a court which is relevant to the issue of registrability of the applicant's mark, or the fact that the basis for registration is, under the provisions of Section 44(e) of the Act, registration of the mark in a foreign country and the foreign application is still pending, will be considered prima facie good and sufficient cause. An applicant's request for a suspension of action under this section filed within the 6-month response period (see § 2.62) may be considered responsive to the previous office action. The first suspension is within the discretion of the Examiner of Trademarks and any subsequent suspension must be approved by the Commissioner.

3. Section 2.87 is revised to read as follows:

§ 2.87 *Combined applications.*

An application also may be filed to register the same mark for any or all of the goods and/or services upon or in connection with which the mark is actually used and which fall within a plurality of classes. However, dates of use for each class, five specimens for each class, and a fee equaling the sum of the fees for filing an application in each class are required. A single certificate of registration for the mark may be issued.

4. Section 2.88 is revised to read as follows:

§ 2.88 *Applications may be combined.*

(a) When several applications have been filed by the same applicant for registration on the same register of a mark shown in identical form on the drawings for goods and/or services in different classes and each of the applications has been allowed, a single certificate based on such applications may be issued. A request for the issuance of a consolidated certificate must be made of record in each of the applications involved prior to the allowance of any of the applications.

(b) The issuance of any original certificate may be suspended upon request of the applicant, for a period not exceeding 6 months, to permit such consolidation.

5. Section 2.187 is revised to read as follows:

§ 2.187 *Certificate of registration may issue to assignee.*

The certificate of registration may be issued to the assignee of the applicant provided the assignment is recorded in the Patent Office at least 10 days before the application is allowed, and written notice of the recording of the assignment and the address of the assignee is made of record in the application file by the applicant or assignee.

Dated: February 14, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72-2684; Filed 2-23-72; 8:46 a.m.]

Published in 37 F.R. 3897, Feb. 24, 1972

[896 O.G. TM 130 (Mar. 21, 1972)]

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(323) TRADEMARK MANUAL OF EXAMINING PROCEDURE

Work is in progress on a Manual of Trademark Examining Procedure which is being designated in brief as "TMEP." The preliminary material for the Manual consists of directives which are being prepared and issued at intervals. Each directive is devoted to a particular procedure in the trade-

mark examining process, and the directives constitute official guidelines for the examination of trademark applications.

Ten directives have been issued to date.

Trademark Examining Directives can be ordered from the Superintendent of Documents, United States Government Printing Office, Washington, D.C., 20402, at an annual subscription of $1.50, plus 50¢ for foreign mailing.

(See original announcement dated July 27, 1971 in the OFFICIAL GAZETTE of August 31, 1971, vol. 889, No. 5.)

ROBERT GOTTSCHALK,
Commissioner of Patents.

Feb. 29, 1972.

[897 O.G. TM 2 (Apr. 4, 1972)]

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(324) PETITION TO MAKE TRADEMARK APPLICATIONS SPECIAL

The practice of expediting the prosecution of new trademark applications on request of the applicant (accelerated prosecution) was rescinded, effective Aug. 1, 1971 (36 F.R. 13231, July 16, 1971; 825 O.G. 2). This action was taken after a careful study of the practice, including a recommendation of the Public Advisory Committee for Trademark Affairs that the Patent Office terminate accelerated prosecution of trademark applications. The study considered both the effect of the procedure on the workload of the Trademark Operations and the broader interest of examining trademark applications in an order which is equitable to all applicants.

Since the termination of this practice, the Office has experienced some increase in the number of petitions requesting the Commissioner to invoke his supervisory authority pursuant to Rule 2.146 in order to advance the examination of applications out of their regular order. This was to be expected since applicants who might have been able to show special circumstances entitling them to advanced examination could previously achieve this special treatment without resorting to a petition. However, some of the petitions now being received are not considered sufficient to justify the extraordinary relief of invoking the supervisory authority of the Commissioner for the purpose of advancing the applications out of their regular order.

In particular, a number of such petitions have been based on the ground that the applicant is about to embark on an advertising campaign or to commit advertising or promotional expenditures in which the mark applied for is material. Such a ground is not considered to constitute appropriate circumstances justifying the advancement of the application out of its regular turn and the petitions based on such ground have been and will continue to be denied. The principal reason for the denial is that these circumstances are applicable to a substantial portion of the trademark applications filed in the Patent Office. The supervisory authority of the Commissioner should be exercised only where an extraordinary reason for such action has been disclosed. See *Anderson & Dyer* v. *Lowry*, 89 O.G. 1861, 1899 C.D. 230, and *Wilputte* v. *Van Ackeren*, 103 USPQ 235. Thus, the extraordinary remedy of invoking the supervisory authority of the Commissioner is not considered appropriate under these circumstances.

In the interest of equitable treatment of all applicants, the policy of the Office in granting such petitions will be restricted to those cases in which particular and very special circumstances exist, such as a demonstrable possibility of loss of substantial rights, rather than circumstances which would be equally applicable to a large number of other applicants for trademark registration.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Date: Mar. 13, 1972.

[897 O.G. TM 2 (Apr. 4, 1972)]

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(325) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Trademark Inter Partes Procedure

A proposal was published at 36 F.R. 18002 to revise, amend, redesignate, or revoke §§ 2.99, 2.104, 2.112, 2.117, 2.119, 2.120, 2.122–2.125, and 2.127–2.129 of the Rules of Practice in Trademark Cases. Pursuant to the notice, written comments have been received and a public hearing was held October 22, 1971. Full consideration has been given to all matter presented and changes in the text of the original proposal have been made in view thereof.

Amendments to the present text of the rules are described below. In cases where the amendment differs from that set forth in the notice of proposed rule making, that change is also described below.

Sections 2.104 and 2.112 are being revised by adopting langage from the Federal rules requiring a short and plain statement showing how the party would be damaged. The proposal required a statement "tending to show why" the party would be damaged.

Section 2.117 is being redesignated as § 2.116 and is being revised to clarify the applicability of the Federal Rules of Civil Procedure to Patent Office proceedings.

A new § 2.117 authorizing suspension of proceedings by the Trademark Trial and Appeal Board when the parties are engaged in civil litigation which may be dispositive of the case, has been added. The new rule gives the Board discretion in matters of suspension whereas the proposed rule required a mandatory suspension.

Section 2.119 is being amended by incorporating the substance of § 1.248 in a new paragraph.

Section 2.120 is being revised to adopt the Federal Rules of Civil Procedure insofar as they are applicable to Patent Office proceedings. The numbers of the applicable Federal rules are not listed since they are incorporated by reference in § 2.120. For example, § 2.120(a)(3) as adopted does not refer to Federal Rule 32 which governs use of discovery depositions.

Section 2.120(a) sets forth restrictions on deposition procedures, discovery of a foreign party and use of discovery depositions.

Existing § 2.120(b) is being deleted and the proposed paragraph is not being adopted. Rule 36 of the Federal Rules of Civil Procedure will govern requests for admissions. A new paragraph (b) governing use of admissions and answers to interrogatories is being adopted.

Existing § 2.120 paragraphs (c) through (e) are being deleted.

Section 2.120(f) is also deleted and proposed § 2.120(c) is not being adopted. Rule 33 of the Federal Rules of Civil Procedure will govern the interrogatory practice. It is believed that the Federal rule will provide uniformity in practice and a body of law which will serve as a guideline to both attorneys and the Board. Some comments were received, however, which expressed a preference for limited interrogatories. In view of such comments, the Office plans to evaluate on a continuing basis the effectiveness and utilization of Federal Rule 33. If instances arise in which Rule 33 does not appear to be fully satisfactory, it may be that consideration will be given to a more limited practice.

A new § 2.120(c) entitled "Failure to Make Discovery: Sanctions" has been added.

Section 2,122(b) is being revised to state that before a pleaded registration will be received in evidence, two copies of the registration showing its status and title or an order for such copies must accompany the opposition or petition to cancel.

Section 2.123(c) relating to printed publications and official records, is being redesignated as § 2.122(c) and revised to incorporate § 1.282 (Patent Rule 282).

A new § 2.122(d) is being added and incorporates the substance of § 1.283 (Patent Rule 283).

Section 2.123 has been completely revised to incorporate the provisions of §§ 1.273–1.281, 1.285, and 1.286 (Patent Rules 273–281, 285, and 286). Portions of the Patent Rules which are not applicable to trademark practice have been omitted and in some instances the Federal Rules of Civil Procedure apply. A few changes have been made in this section as originally proposed; they are as follows:

The title of § 2.123 is being amended by inserting the word "trial" before "testimony."

Proposed § 2.123(e)(5) is being revised to permit a witness to sign a deposition before any officer authorized to administer oaths.

Proposed § 2.123(f)(5) is being deleted and § 2.123(f)(6) is being redesignated as § 2.123(f)(5).

Section 2.124(b) is being amended to require testimony by written questions to be prepared with each answer preceded by its corresponding question.

Section 2.124a is being revoked. Testimony in foreign countries will be covered in § 2.124(d) which provides that such testimony will be taken by depositions upon written questions.

Reference numbers in § 2.125 have been changed and the reference to "the original transcript" in the second sentence of paragraph (a) is being changed to read "the certified transcript."

Section 2.127(a) provides that the Trademark Trial and Appeal Board may treat a motion as conceded when a party fails to file a brief in opposition to the motion. Sections 2.127 (b) and 2.129(c) are amended by adding a sentence requiring briefs in opposition to petitions for reconsideration to be filed within 15 days.

Section 2.128(b) includes certain changes with respect to the form required for briefs.

In consideration of the comments and pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793, 35 U.S.C. 6), Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is hereby amended as follows:

1. In § 2.99, a new paragraph (d) is added and reads as follows:

§ 2.99 *Application to register as concurrent user.*

* * * * *

(d) When concurrent registration is sought on the basis of a court determination of the rights of the parties to use the marks in commerce, the application shall be examined by the Examiner of Trademarks. If the applicant is entitled to registration subject only to the concurrent lawful use of a party to the court proceeding, the Examiner of Trademarks may publish or allow the application, provided the court decree specifies the rights of the parties.

2. Section 2.104 is revised to read as follows:

§ 2.104 *Contents of opposition.*

The opposition must set forth a short and plain statement showing how the opposer would be damaged by the registration of the opposed mark and state the grounds for opposition. A duplicate copy of the opposition including exhibits shall be filed.

3. Section 2.112 is revised to read as follows:

§ 2.112 *Petition for cancellation.*

The petition to cancel, which must be verified, or include a declaration in accordance with § 2.20, must set forth a short and plain statement showing how the petitioner is or will be damaged by the registration, state the grounds for cancellation, and indicate the respondent party to whom notice shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition. Applications to cancel different registrations owned by the same party may be joined in one petition when appropriate, but the fee for each application to cancel a registration must accompany the petition.

4. Section 2.117 is redesignated as § 2.116 and paragraph (a) is revised as amended, § 2.116 reads as follows:

§ 2.116 *Federal Rules of Civil Procedure.*

(a) Except as otherwise provided, and wherever applicable and appropriate, procedure and practice in inter partes proceedings shall be governed by the Federal Rules of Civil Procedure.

* * * * *

5. A new § 2.117 is added and reads as follows:

§ 2.117 *Suspension of proceedings.*

Whenever it shall come to the attention of the Trademark Trial and Appeal Board that parties to a pending case are engaged in a civil action which may be dispositive of the case, proceedings before the Board may be suspended until termination of the civil action.

6. Section 2.119 is amended as follows: Paragraph (a) is revised, paragraph (b) is redesignated as paragraph (c), and a new paragraph (b) is added. As amended, § 2.119 reads as follows:

§ 2.119 *Service of papers.*

(a) Every paper filed in the Patent Office in inter partes cases, including notice of appeal, must be served upon the other parties except the notice of interference (§ 2.93), the notice of opposition (§ 2.105), the petition for cancellation (§ 2.113), and the notice of a concurrent use proceeding (§ 2.99), which are mailed by the Patent Office. Proof of such service must be made before the paper will be considered by the Office. A statement signed by the attorney or agent, attached to or appearing on the original paper when filed, clearly stating the date and manner in which service was made will be accepted as prima facie proof of service.

(b) Service of papers must be on the attorney or agent of the party if there be such or on the party if there is no attorney or agent, and may be made in either of the following ways: (1) by delivering a copy of the paper to the person served; (2) by leaving a copy at the usual place of business of the person served, with someone in his employment; (3) when the person served has no usual place of business, by leaving a copy at his residence, with a member of his family over 14 years of age and of discretion; (4) transmission by first-class mail, which may also be certified or registered. Whenever it shall be satisfactorily shown to the Commissioner that none of the above modes of obtaining service or serving the paper is practicable, service may be by notice published in the OFFICIAL GAZETTE.

(c) When service is made by mail, the date of mailing will be considered the date of service. Whenever a party is required to take some action within a prescribed period after the service of a paper upon him by another party and the paper is served by mail, 5 days shall be added to the prescribed period.

7. Section 2.120 is revised to read as follows:

§ 2.120 *Discovery procedure.*

The provisions of the Federal Rules of Civil Procedure relating to discovery shall apply in inter partes trademark cases except as otherwise provided in this section. The Trademark Trial and Appeal Board will specify the closing date for the taking of discovery.

(a) *Depositions for discovery*—(1) *Procedure.* The deposition of a person shall be taken in the Federal judicial district where he resides or is regularly employed. The responsibility for securing the attendance of a propose deponent, other than a party or anyone who at the time set for the taking of the deposition was an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party, rests wholly with the interested party. See 35 U.S.C. 24.

(2) *Discovery of foreign party.* The discovery deposition of a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Procedure to testify on behalf of a party, domiciled in a foreign country may be taken in the manner prescribed by § 2.124.

(3) *Use of discovery depositions.* A discovery deposition shall not be considered as part of the record in the case unless the party offering the deposition, or any part thereof, files the same before the close of his testimony period (testimony-in-chief or rebuttal as appropriate) and also files a notice of reliance thereon. A discovery deposition should not be filed in the Patent Office in the absence of a notice of reliance. Objections, including any made during the examination, will be considered only if made or renewed at the hearing.

(b) *Use of admission or answer to interrogatory.* No admission or answer to an interrogatory shall be considered as part of the record in the case unless the party propounding the request for admission or interrogatory files, before the close of his testimony period (testimony-in-chief or rebuttal, as appropriate), a copy of the admission and the request therefor and/or a copy of the interrogatory and its answer and also files a notice of reliance thereon.

(c) *Failure to make discovery: Sanctions.* If any party fails or refuses to answer any proper question in taking discovery depositions or fails or refuses to answer any proper question propounded by interrogatories or fails or refuses to comply with a request to produce and permit the inspection and copying of designated things, the party seeking discovery

may apply to the Trademark Trial and Appeal Board for an order compelling discovery. If a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party, fails to obey an order to provide or permit discovery, the Trademark Trial and Appeal Board may strike out all or any part of any pleading of that party, dismiss the action or proceeding, or deny any part thereof, enter judgment as by default against that party or take any such other action as may be deemed appropriate.

8. In § 2.122, paragraph (b) is revised and new paragraphs (c) and (d) are added. As amended, those paragraphs of § 2.122 read as follows:

§ 2.122 *Matters in evidence.*

* * * * *

(b) A registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if two copies showing status and title of the printed registration or an order for such copies accompany the opposition or petition.

(c) Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation, and official records, if competent evidence and pertinent to the issue, may be introduced in evidence by filing in the Patent Office a notice to that effect during the period for the taking of the testimony of the party (during the period for taking of testimony-in-chief if such matters are not in rebuttal), specifying the record or the printed publication, the page or pages to be used, indicating generally its relevance, and accompanied by the record or authenticated copy or the printed publication or a copy. When a copy of an official record of the Patent Office is filed, it need not be a certified copy. The notice and copy of the record or publication must be served on each of the other parties.

(d) Upon motion duly made and granted, testimony taken in another proceeding, or testimony taken in a suit between the same parties or those in interest, may be used in a proceeding, so far as relevant and material, subject, however, to the right of any contesting party to recall or demand the recall of witnesses whose testimony has been taken, and to take other testimony in rebuttal of the testimony.

§ 2.123 *Trial testimony in inter partes cases.*

(a) Manner of taking testimony: Testimony of witnesses in inter partes cases may be taken (1) by depositions upon oral examination as provided by this section, or (2) by depositions upon written questions in accordance with the requirements of this section and § 2.124.

(b) Stipulations: If the parties so stipulate in writing, depositions may be taken before any person authorized to administer oaths, at any place, upon any notice, and in any manner and when so taken may be used like other depositions. By agreement of the parties, the testimony of any witness or witnesses of any party, may be submitted in the form of an affidavit by such witness or witnesses. The parties may stipulate what a particular witness would testify to if called, or the facts in the case of any party may be stipulated.

(c) Notice of examination of witnesses: Before the depositions of witnesses shall be taken by a party, due notice in writing shall be given to the opposing party or parties, as provided in § 2.119(b), of the time when and place where the depositions will be taken, of the cause or matter in which they are to be used, and the name and address of each witness to be examined; if the name of a witness is not known, a general description sufficient to identify him or the particular class or group to which he belongs, together with a satisfactory explanation, may be given instead. Neither party shall take depositions in more than one place at the same time, nor so nearly at the same time that reasonable opportunity for travel from one place of examination to the other is not available.

(d) Persons before whom depositions may be taken: Depositions may be taken before persons designated by Rule 28 of the Federal Rules of Civil Procedure.

(e) Examination of witnesses:

(1) Each witness before testifying shall be duly sworn according to law by the officer before whom his deposition is to be taken.

(2) The deposition shall be taken in answer to questions, with the questions and answers recorded in their regular order by the officer, or by some other person (who shall be subject to the provisions of Rule 28 of the Federal Rules of Civil Procedure) in the presence of the officer except when his presence is waived on the record by agreement of the parties. The Testimony shall be taken stenographically and transcribed, unless the parties present agree otherwise. In the absence of all opposing parties and their attorneys or agents, depositions may be taken in longhand, typewriting, or stenographically.

(3) The opposing party shall have full opportunity to cross-examine the witnesses. If the opposing party shall attend the examination of witnesses not named in the notice, and shall either cross-examine such witnesses or fail to object to their examination, he shall be deemed to have waived his right to object to such examination for want of notice.

(4) All objections made at the time of the examination to the qualifications of the officer taking the deposition, or to the manner of taking it, or to the evidence presented, or to the conduct of any party, and any other objection to the proceedings, shall be noted by the officer upon the deposition. Evidence objected to shall be taken subject to the objections.

(5) When the deposition has been transcribed, the deposition shall be carefully read over by the witness or by the officer to him, and shall then be signed by the witness in the presence of any officer authorized to administer oaths unless the reading and the signature be waived on the record by agreement of all parties.

(f) Certification and filing by officer. The officer shall annex to the deposition his certificate showing:

(1) Due administration of the oath by the officer to the witness before the commencement of his deposition;

(2) The name of the person by whom the deposition was taken down, and whether, if not taken down by the officer, it was taken down in his presence;

(3) The presence or absence of the adverse party;

(4) The place, day, and hour of commencing and taking the deposition;

(5) The fact that the officer was not disqualified as specified in Rule 28 of the Federal Rules of Civil Procedure.

If any of the foregoing requirements are waived, the certificate shall so state. The officer shall sign the certificate and affix thereto his seal of office, if he has such a seal. Unless waived on the record by agreement, he shall then, without delay, securely seal in an envelope all the evidence, notices, and paper exhibits, inscribed upon the envelope a certificate giving the number and title of the case, the name of each witness, and the date of sealing, address the package, and forward the same to the Commissioner of Patents. If the weight or bulk of an exhibit shall exclude it from the envelope, it shall, unless waived on the record by agreement of all parties, be authenticated by the officer and transmitted in a separate package marked and addressed as provided in this section.

(g) Form of deposition:

(1) The pages of each deposition must be numbered consecutively, and the name of the witness plainly and conspicuously written at the top of each page. The deposition may be written on legal-size or letter-size paper, with a wide margin on the left hand side of the page, and with the writing on one side only of the sheet. The questions propounded to each witness must be consecutively numbered and each question must be followed by its answer.

(2) Exhibits must be numbered or lettered consecutively and each must be marked with the number and title of the case and the name of the party offering the exhibit. Entry and consideration may be refused to improperly marked exhibits.

(h) Depositions must be filed. All depositions which are taken must be duly filed in the Patent Office. On refusal to file, the Office at its discretion will not further hear or consider the contestant with whom the refusal lies; and the Office may, at its discretion, receive and consider a copy of the withheld deposition, attested by such evidence as is procurable.

(i) Inspection of depositions: After the depositions are filed in the Office, they may be inspected by any party to the case, but they cannot be withdrawn for the purpose of printing. They may be printed by someone specially designated by the Office for that purpose, under proper restrictions.

(j) Effect of errors and irregularities in depositions: Notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and in the case of such injury it must be made to appear that, as soon as the party became

aware of the ground of objection, he gave notice thereof. Rule 32(d)(1), (2), and (3)(a) and (b) of the Federal Rules of Civil Procedure shall apply to errors and irregularities in depositions.

(k) Objections to admissibility: Subject to the provisions of paragraph (j) of this section, objection may be made to receiving in evidence any deposition or part thereof, or any other evidence, for any reason which would require the exclusion of the evidence according to the established rules of evidence, which will be applied strictly by the Office.

(l) Evidence not considered: Evidence not obtained and filed in compliance with these sections will not be considered.

10. In § 2.124, paragraphs (a) and (b) are revised and a new paragraph (d) is added. As amended, § 2.124 reads as follows:

§ 2.124 *Testimony by depositions upon written questions.*

(a) A party may take the testimony of a witness by written questions to be propounded by an officer before whom depositions may be taken. See Rule 28 of the Federal Rules of Civil Procedure. The questions shall be served upon the other party within 10 days after the opening date set for taking the testimony of the party submitting the questions, together with a notice stating the name and address of the person who is to answer them and the name or descriptive title and address of the officer before whom the deposition is to be taken. Within 10 days thereafter, a party so served may serve cross questions upon the party proposing to take the deposition. Within 5 days thereafter, the latter may serve redirect questions upon a party who has served cross questions. Within 3 days after being served with redirect questions a party may serve recross questions upon the party proposing to take the depositions. Written objections to questions may be served on the party propounding the questions, and in response thereto substitute questions may be served, within 3 days.

(b) A copy of the notice and copies of all questions served shall be delivered by the party taking the testimony to the officer designated in the notice, who shall proceed to take the testimony of the witness in response to the questions and to prepare each answer immediately preceded by its corresponding question, then certify, and file the deposition, attaching thereto the copy of the notice and the questions received by him. Such depositions are subject to the same rulings for filing and serving copies as other depositions.

* * * * *

(d) Testimony in foreign countries shall be taken only by depositions upon written questions unless the parties stipulate otherwise in writing. Rule 28(b) of the Federal Rules of Civil Procedure shall apply to the taking of testimony in foreign countries.

§ 2.124a [*Revoked*]

11. Section 2.124a is revoked.

12. Section 2.125 is revised to read as follows:

§ 2.125 *Copies of testimony.*

(a) One copy of the transcript of testimony (taken in accordance with § 2.123(e) through (h) or § 2.124), together with copies of documentary exhibits, shall be served on each adverse party within 30 days after completion of the taking of such testimony. The certified transcript and exhibits and one copy of the transcript shall be filed in the Patent Office as promptly as possible.

(b) Each transcript and the copies thereof shall comply with § 2.123(g) as to arrangement, indexing and form.

13. In § 2.127, paragraphs (a) and (b) are revised. As amended, § 2.127 reads as follows:

§ 2.127 *Motions.*

(a) Motions shall be made in writing and shall contain a full statement of the grounds therefor. Any brief or memorandum in support of a motion shall accompany or be embodied in the motion. Briefs in opposition to a motion shall be filed within 15 days from the date of service of the motion unless another time is specified by the Trademark Trial and Appeal Board or the time is extended on request. Where a party fails to file a brief in opposition to a motion, the Trademark Trial and Appeal Board may treat the motion as conceded. Oral hearings will not be held on motions except on order of the Trademark Trial and Appeal Board.

(b) Any petition for reconsideration or modification of a decision, if it is not appealable, must be filed within 10 days after the decision or, if the decision is appealable, within the time specified in § 2.129(c). Any brief in opposition shall be filed within 15 days after service of the petition.

14. In § 2.128, paragraph (b) is revised. As amended, § 2.128 reads as follows:

§ 2.128 *Final hearings and briefs.*

(b) Briefs shall be submitted in typewritten or printed form, double spaced on letter or legal size paper. Without leave of the Trademark Trial and Appeal Board, no brief shall contain more than 50 pages of argument and, in case of the reply brief, the entire brief shall not exceed 25 pages. Each brief shall contain an alphabetical index of cases therein.

* * * * *

15. In § 2.129, paragraph (c) is revised. As amended, § 2.129 reads as follows:

§ 2.129 *Oral argument.*

* * * * *

(c) Any petition for rehearing, reconsideration, or modification of a decision must be filed within 30 days from the date thereof. Any brief in opposition shall be filed within 15 days after service of the petition.

Effective date. This revision shall be applicable to all proceedings instituted on or after July 1, 1972.

Date: April 5, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved: April 11, 1972.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72-5830; Filed 4-17-72; 8:52 am]

Published in 37 F.R. 7605; Apr. 18, 1972

[898 O.G. TM 170 (May 16, 1972)]

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(326) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Appeal to U.S. Court of Customs and Patent Appeals

The Commissioner of Patents is amending §§ 1.301 and 2.145 of the rules of practice to set forth the time in which an order for transmitting a transcript to the Court of Customs and Patent Appeals should be filed in the Patent Office. Additionally, for the purpose of clarification, all references to "subsection" in § 2.145 have been amended to read "paragraph." These amendments do not effect any change in practice, but merely notify parties filing appeals of the time necessary for the Patent Office to copy and certify a transcript. Since these changes impose no burden on any person, notice and public procedure thereon are deemed unnecessary.

Therefore, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123), and section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Parts 1 and 2 of Chapter I of Title 37 of the Code of Federal Regulations are hereby amended as follows:

* * * * *

2. In § 2.145, paragraph (a) is amended by adding a sentence at the end; paragraphs (b), (c), and (d) are amended by substituting "paragraph" for "subsection." As amended, § 2.145 reads as follows:

§ 2.145 *Appeal to court and civil action.*

(a) *Appeal to U.S. Court of Customs and Patent Appeals.* An applicant for registration, or any party to an interference, opposition, or cancellation proceeding or any party to an application to register as a concurrent user, hereinafter referred to as inter partes proceedings, who is dissatisfied with the decision of the Trademark Trial and Appeal Board and any registrant who has filed an affidavit or declaration under section 8 of the act or who has filed an application for renewal and is dissatisfied with the decision of the Commissioner (§§ 2.165, 2.184), may appeal to the U.S. Court of Customs and Patent Appeals. The appellant must take the following

steps in such an appeal: (1) In the Patent Office give notice to the Commissioner and file the reasons of appeal (see paragraphs (b) and (d) of this section); (2) in the court, file a petition of appeal and a certified transcript of the record within a specified time after filing the reasons of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

(b) *Notice and reasons of appeal.* (1) when an appeal is taken to the U.S. Court of Customs and Patent Appeals, the appellant shall give notice thereof to the Commissioner, and file in the Patent Office, within the time specified in paragraph (d) of this section, his reasons of appeal specifically set forth in writing.

(2) In inter partes proceedings, the notice and reasons must be served as provided in § 2.119.

(c) *Civil action.* (1) Any person who may appeal to the U.S. Court of Customs and Patent Appeals (paragraph (a) of this section), may have remedy by civil action under section 21(b) of the act. Such civilization must be commenced within the time specified in paragraph (d) of this section.

(2) If an applicant or registrant in an ex parte case has taken an appeal to the U.S. Court of Customs and Patent Appeals, he thereby waives his right to proceed under section 21(b) of the act.

(3) If a party to an inter partes proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals, and any adverse party to the case shall, within 20 days after the appellant shall have filed notice of the appeal to the court (paragraph (b) of this section), file notice with the Commissioner that he elects to have all further proceedings conducted as provided in section 21(b) of the act, certified copies of such notices will be transmitted to the U.S. Court of Customs and Patent Appeals for such action as may be necessary. The notice of election must be served as provided in § 2.119.

(d) *Time for appeal or civil action.* The time for filing the notice and reasons of appeal to the U.S. Court of Customs and Patent Appeals (paragraph (b) of this section), or for commencing a civil action (paragraph (c) of this section), is 60 days from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, as the case may be. If a petition for rehearing or reconsideration is filed within 30 days after the date of the decision, the time is extended to 30 days after action on the petition. No petition for rehearing or reconsideration filed outside the time specified herein after such decision, nor any proceedings on such petition shall operate to extend the period of 60 days hereinabove provided. The time specified herein are calendar days. If the last day of time specified for appeal, or commencing a civil action falls on a Saturday, Sunday, or legal holiday, the time is extended to the next day which is neither a Saturday, Sunday, nor a holiday. If a party to an inter partes proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals and an adverse party has filed notice under section 21(a)(1) of the act that he elects to have all further proceedings conducted under section 21(b) of the act, the time for filing a civil action thereafter is specified in section 21(a)(1) of the act.

Effective date. This amendment will become effective upon its publication in the Federal Register (5-11-72).

Dated: May 1, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved: April 28, 1972.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72-7159; Filed 5-10-72; 8:49 am]

Published in 37 F.R. 9175; May 11, 1972

[899 O.G. TM 77 (June 13, 1972)]

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(327) BULKY SPECIMENS IN TRADEMARK AND SERVICE MARK APPLICATIONS

Many of the applications which are being received in the Trademark Application Section contain specimens which are too bulky to be placed inside the application file. The handling and storing of these bulky specimens is taking more time and space than can be justified. The trademark rules do not provide for filing bulky specimens, and applicants and attorneys are requested to adhere to the precise provisions of the rules.

Trademark Rule 2.56 requires that specimens be of a material suitable for being placed in a file, be capable of being arranged flat (preferably not more than one inch in thickness), and not be larger than 8½ x 13 inches. If specimens of this character cannot be furnished, Trademark Rule 2.57 provides that facsimiles in the nature of photographs or similar reproductions be filed. Facsimiles must not be larger than 8½ x 13 inches and should clearly and legibly show the mark and all matter used in connection therewith.

In order to reduce the quantity of bulky specimens and to avoid the possibility of delay in examination due to bulky specimens, the following procedure has been adopted:

When specimens cannot be fitted into the file, the Trademark Application Section forwards the specimens to the Examiner separate from the file and attaches to the file two copies of a form which is a pre-examination memorandum pointing out that the bulky specimens are not acceptable and that proper specimens should be filed promptly. Upon receipt of the file and the forms, the Examiner mails one copy of the form to the applicant, or applicant's attorney if there be one, and places the other copy in the file. The Examiner will then destroy four of the bulky specimens, retaining one until proper specimens or facsimiles are received. Failure to furnish proper specimens as requested in the memorandum may delay the process of examination of the application.

ROBERT GOTTSCHALK,
Commissioner of Patents.

June 16, 1972.

[900 O.G. TM 176 (July 25, 1972)]

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(328) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Petition for Review of Interlocutory Decision

The Commissioner of Patents is amending § 2.127(b) of the rules of practice to extend the time for filing a petition for reconsideration or modification of an interlocutory decision. The existing rule requires that such petition be filed within 10 days from the date of the decision. Recent experience has demonstrated that this time period is insufficient in view of the possibility of delays in communicating the decision to the concerned parties. Accordingly, the rule is amended to permit filing of a petition within 30 days from the date of the decision. Since this change imposes no burden on any person, notice and public procedures thereon are deemed unnecessary.

Therefore, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is hereby amended as follows:

§ 2.127 *Motions.*

* * * * *

(b) Any petition for reconsideration or modification of a decision must be filed within 30 days from the date thereof. Any brief in opposition shall be filed within 15 days after service of the petition.

* * * * *

Effective date. This amendment shall be applicable to all decision dated on or after September 1, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

July 18, 1972.

Approved: July 21, 1972.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72-11883; Filed 7-28-72; 8:54 am]

Published in 37 F.R. 15304; July 29, 1972

[902 O.G. TM 2 (Sept. 5, 1972)]

(329) MEETING OF THE PUBLIC ADVISORY COMMITTEE FOR TRADEMARK AFFAIRS

The Public Advisory Committee for Trademark Affairs was established by the Secretary of Commerce to advise the Patent Office of the Department of Commerce on steps which can be taken in order to increase the efficiency and effectiveness of the administration of the Trademark Act and to provide a continuing source of knowledge from the private sector to the Government in the trademark field.

The next meeting of the committee will be held on February 22nd and 23rd, 1973, at the Cherry Hill Inn, Cherry Hill, New Jersey, beginning at 9:00 a.m. each day in the Currier and Ives Room.

The following agenda is to be considered:

1. Review of pending Advisory Committee projects;
2. Report and discussion of the implementation of previous Advisory Committee recommendations of a recently completed study relating to trademark application processing and record keeping;
3. Report and discussion of the status of the Trademark Operations;
4. Discussion of the use of forms in the Trademark Operations; and
5. Discussion of working hours in the Trademark Operations.

The membership of the Advisory Committee consists of nine members of the Patent Office-Trademark Affairs Committee of the United States Trademark Association.

Meetings of the Advisory Committee are open to the public. Public attendance depending on available space, may be limited to those persons who have notified the Advisory Committee Management Officer in writing, at least five days prior to the meeting, of their intentions to attend the February 22–23 meeting.

Any member of the public may file a written statement with the Committee before, during, or after the meeting, and to the extent that time for the meeting permits the Committee Chairman may allow public presentation of oral statements at the meeting.

All communications regarding this Advisory Committee should be addressed to Mr. Rene D. Tegtmeyer, Advisory Committee Management Officer for Trademark Affairs, Room 3–11D27, U.S. Patent Office, Washington, D.C. 20231.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Jan. 16, 1973.

[907 O.G. TM 68 (Feb. 13, 1973)]

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(330) TRADEMARKS, TRADE NAMES, AND COPYRIGHTS

[19 CFR Part 133]

Filing of Increased Number of Copies of Documents With Application To Record Trademark or Copyright

Notice is hereby given that under the authority of R.S. 251, as amended (19 U.S.C. 66), and section 624, 46 Stat. 759 (19 U.S.C. 1624), it is proposed to amend §§ 133.3 and 133.33 of the Customs regulations to provide that the number of copies of documents required by the Bureau of Customs to be filed with an application to record a copyright or trademark is increased from 700 to 1,000.

Accordingly, it is proposed to amend paragraph (a) of § 133.3, and paragraph (a)(2) of § 133.33 to read as follows:

§ 133.3 *Documents and fee to accompany application.*

(a) *Documents.* The application shall be accompanied by:

(1) A status copy of the certificate of registration certified by the U.S. Patent Office showing title to be presently in the name of the applicant; and

(2) One thousand copies of this certificate, or of a U.S. Patent Office facsimile. The copies may be reproduced privately and shall be on paper approximately 8½ x 11 in size. If the certificate consists of two or more pages, the copies may be reproduced on both sides of the paper.

* * * * *

§ 133.33 *Documents and fee to accompany application.*

(a) * * *

* * * * *

(2) One thousand 8 x 10½ photographic or other likenesses reproduced on paper of any three-dimensional work, design, print, label, or other work not readily identifiable by title and author. An application shall be excepted from this requirement if it covers a work such as a book, magazine, periodical, or similar copyrighted matter readily identifiable by title and author. One thousand likenesses of a component part of a copyrighted work, together with the name or title, if any, by which the part so depicted is identifiable, may accompany an application covering an entire copyrighted work.

* * * * *

Consideration will be given to relevant data, views, or arguments pertaining to the proposed amendment which are submitted to the Commissioner of Customs, Attention: Regulations Division, Washington, D.C. 20226, and received no later than March 19, 1973.

Written material or suggestions submitted will be available for public inspection in accordance with § 103.0(b) of the Customs regulations (19 CFR 103(b)), at the Regulations Division, Bureau of Customs, Washington, D.C., during regular business hours.

Approved: Feb. 8, 1973.

EDWARD L. MORGAN,
Assistant Secretary of the Treasury.

[SEAL]

EDWIN F. RAINS,
Acting Commissioner of Customs.

[FR Doc. 73–3039; Filed 2–14–73; 8:45 am]

Published in 38 F.R. 4515–4516; Feb. 15, 1973

[908 O.G. TM 136 (Mar. 20, 1973)]

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(331) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Abandonment of Application

A proposal was published at 37 FR 18391 to revise § 2.68. Full consideration has been given to all comments received pursuant to this notice and changes in the text of the original proposal have been made in view thereof.

The revision of § 2.68 permits an attorney or other person representing the applicant to abandon or withdraw an application. Prior to this revision, the applicant was required to sign the statement of abandonment. The rule is further revised by the addition of a sentence which indicates that in a Patent Office proceeding, abandonment of the application does not affect any rights which the applicant may have in the mark. The word "withdrawal" which has been added to the rule is synonymous with the word "abandonment" in the context of this rule and may be used by those who prefer to do so.

Effective date. This revision shall become effective on March 27, 1973.

Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is amended by revising § 2.68 to read as follows:

§ 2.68 *Express abandonment (withdrawal) of application.*

An application may be expressly abandoned by filing in the Patent Office a written statement of abandonment or withdrawal of the application signed by the applicant, or the attorney or other person representing the applicant. The fact that an application has been expressly abandoned shall not, in any proceeding in the Patent Office, affect any rights that the applicant may have in the mark which is the subject of the abandoned application.

Dated: Mar. 15, 1973.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved:

RICHARD O. SIMPSON,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 73–5768; Filed 3–26–73; 8:45 am]

Published in 38 F.R. 7985; Mar. 27, 1973

[909 O.G. TM 254 (Apr. 24, 1973)]

(332) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PARTS 2 AND 6—RULES OF PRACTICE IN TRADEMARK CASES

International Trademark Classification

A proposal was published at 37 F.R. 6404 to revise § 6.1 of the Rules of Practice in Trademark Cases. The Patent Office proposed to establish the "International Classification of Goods and Services to Which Trademarks Are Applied" (the subject of the "Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks" of 1957, as revised at Stockholm on July 14, 1967) as the primary classification of goods and services for registration of trademarks and service marks. Pursuant to the Notice, written comments have been received, and a public hearing was held on June 14, 1972. Full consideration has been given to all matter presented, and changes in the text of the original proposal have been made in view thereof. It has been determined that adoption of the international classification system is desirable.

The Patent Office has studied the international classification and, since Mar. 5, 1968, has indicated the appropriate international class in all publications and on all issued registrations and renewals as a subsidiary classification. Based on this experience and the comments received, it is now believed that adoption of the international schedule as the primary classification system is desirable. The international system is easier to administer because of fewer classes of goods and the availability of an alphabetical listing of goods and services.

The Nice Agreement provides for an International Committee of Experts whose objective is to keep the classification current. The classification of specific goods and services is set forth in the Alphabetical List entitled "International Classification of Goods and Services to Which Trademarks Are Applied" (published by the World Intellectual Property Organization). In addition, the International Trademark Classification List contains the names of the classes setting forth the basic contents of each class. The Alphabetical List also comprises explanatory notes which serve as guidelines for determining the appropriate international class for a specific product or service.

The alphabetical listing within the International Trademark Classification Manual is currently used by the Office as a guideline for determining the degree of particularity of identification of goods. See "Identification of Goods and Services in Trademark Applications," 36 F.R. 13232; July 16, 1971.

Applications for registrations filed on or after Sept. 1, 1973, and registrations issuing thereon, will be classified according to the international classification set forth in the new § 6.1. Accordingly, the international classification is adopted under Section 30 of the Trademark Act for all purposes under the statute and rules; and, therefore, will be the criterion for determining, inter alia, fees.

Applications for the registration of marks filed on or before Aug. 31, 1973, appeals or petitions to revive or oppositions filed in connection with said applications, and affidavits, renewals and petitions for cancellation filed in connection with registrations issuing thereon, will continue to be processed under the classification system existing at the time the mark was registered.

All applications which are published and registrations which are issued will carry both the appropriate international classification and existing U.S. classification number.

An insufficient fee, in connection with an appeal or opposition on any application or in connection with an affidavit or renewal filed in connection with any registration, will not render the same unacceptable, if the proper fee is submitted within a time limit set forth in a notification of the defect, providing the proper fee for at least one class has been originally submitted within the applicable time limit. This will be the case even if the full fee is not received within the sixth year in the case of an affidavit filed under Section 8 or before the end of the twentieth year, including the grace period, in the case of renewal applications, or within the six-month statutory response period in the case of an appeal, or within the thirty-day opposition period, or any extension thereof in the case of the filing of an opposition.

The existing classification system will continue to be used for searching registered and pending marks until all documents in the search file are organized on the basis of the international system of classification. Until this changeover is effected, the U.S. class designation will continue to be printed on all published applications and registrations issued under the existing or the international classification system to facilitate searching on the basis of the existing U.S. system of classification.

Until all applications filed on or before Aug. 31, 1973, have been disposed of, the trademark sections of the OFFICIAL GAZETTE, which are organized by class, will include two sections: one for applications published or registrations issued on the basis of applications filed on or before Aug. 31, 1973, organized by class according to the U.S. schedule of classes; the other section for applications published or registrations issued on the basis of applications filed on or after Sept. 1, 1973, organized by class according to the new international schedule.

Certification marks and collective membership marks will continue to be classified as set forth in redesignated §§ 6.3 and 6.4.

Efforts will be made to have the International Trademark Classification List printed by the Government Printing Office or otherwise assure the availability of the List from local sources. Notification will appear in the OFFICIAL GAZETTE when the List is available from local sources or the Government Printing Office.

The English edition of the "International Classification of Goods and Services to Which Trademarks Are Applied" can presently be ordered from:

Sales Branch, The Patent Office, Block C
Station Square House, St. Mary Cray
Orpington, Kent, England

Certain modifications and additions to the international trademark classification have been published as supplements and are also available from the British Office. In addition, and inasmuch as the World Intellectual Property Organization (WIPO) has issued the List in several languages, it is anticipated that an English version will be published by that organization.

We have been advised by the Patent Office of the United Kingdom that the only acceptable methods of payment for the International Trademark Classification List are by International Postal Money Order or by banker's draft payable in sterling and drawn on a bank in the United Kingdom. Orders for the international classification and for the supplements can be made by remittance in the following amount(s):

International Trademark Classification		50 pence
Nov. 15, 1967, supplement		5 pence
Mar. 18, 1970, supplement		Free
Mar. 3, 1971, supplement		10 pence
Total cost (including postage by surface mail)		65 pence
Additional charge for postage by air mail	1 pound	55 pence
Total cost by airmail	2 pounds	20 pence

Effective Date.—This revision shall become effective as of Sept. 1, 1973. In consideration of the comments and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 792, 35 U.S.C. 6), as amended Oct. 5, 1971 (85 Stat. 364), and in section 30 of the Trademark Act of 1946 as amended (Oct. 9, 1962, 76 Stat. 773, 15 U.S.C. 1112), Parts 2 and 6 of Chapter I of Title 37 of the Code of Federal Regulations are hereby amended as follows:

1. Section 2.85 is revised to read as follows:

§ 2.85. *Classification Schedules*

(a) Section 6.1 of Part 6 of this chapter specifies the system of classification for goods and services which applies for all statutory purposes to trademark application filed in the Patent Office on or after Sept. 1, 1973, and to registrations issued on the basis of such applications. It shall not apply to applications filed on or before Aug. 31, 1973, nor to registrations issued on the basis of such applications.

(b) With respect to applications filed on or before Aug. 31, 1973, and registrations issued thereon, including older registrations issued prior to that date, the classification system under which the registration was granted will govern for all statutory purposes, including, inter alia, the filing of petitions to revive, appeals, oppositions, petitions for cancellation, affidavits under Section 8 and Renewals, even though such peti-

tions to revive, appeals, etc., are filed on or after Sept. 1, 1973.

(c) Section 6.2 of Part 6 of this chapter specifies the system of classification for goods and services which applies for all statutory purposes to all trademark applications filed in the Patent Office on or before Aug. 31, 1973, and to registrations issued on the basis of such applications, except when the registration may have been issued under a classification system prior to that set forth in § 6.2. Moreover, this classification will also be utilized for facilitating trademark searches until all pending and registered marks in the search file are organized on the basis of the international system of classification.

(d) Renewals filed on registrations issued under a prior classification system will be processed on the basis of that system.

(e) Where the amount of the fee received on filing an appeal or petition to revive in connection with an application or on filing an affidavit under § 8(a) or § 8(b) or on an application for renewal or in connection with an opposition or petition for cancellation is sufficient for at least one class of goods or services but is less than the required amount because a multiple class application or registration is involved, the appeal or petition to revive or the affidavit or renewal application or opposition or petition for cancellation will not be refused on the ground that the amount of the fee was insufficient if the required additional amount of the fee is received in the Patent Office within the time limit set forth in the notification of this defect by the Examiner.

(f) Sections 6.3 and 6.4 specify the system of classification which applies to certification marks and collective membership marks.

(g) Classification schedules shall not limit or extend the applicant's rights.

2. Sections 6.1, 6.2 and 6.3 are redesignated as §§ 6.2, 6.3 and 6.4, respectively.

3. A new § 6.1 is added and reads as follows:

§ 6.1. ***International schedule of classes of goods and services***

GOODS

1. Chemical products used in industry, science, photography, agriculture, horticulture, forestry; artificial and synthetic resins; plastics in the form of powders, liquids or pastes, for industrial use; manures (natural and artificial); fire extinguishing compositions; tempering substances and chemical preparations for soldering; chemical substances for preserving foodstuffs; tanning substances; adhesive substances used in industry.
2. Paints, varnishes, lacquers; preservatives against rust and against deterioration of wood; colouring matters, dyestuffs; mordants; natural resins; metals in foil and powder form for painters and decorators.
3. Bleaching preparations and other substances for laundry use; cleaning, polishing, scouring and abrasive preparations; soaps; perfumery, essential oils, cosmetics, hair lotions; dentifrices.
4. Industrial oils and greases (other than oils and fats and essential oils); lubricants; dust laying and absorbing compositions; fuels (including motor spirit) and illuminants; candles, tapers, night lights and wicks.
5. Pharmaceutical, veterinary, and sanitary substances; infants' and invalids' foods; plasters, material for bandaging; material for stopping teeth, dental wax, disinfectants; preparations for killing weeds and destroying vermin.
6. Unwrought and partly wrought common metals and their alloys; anchors, anvils, bells, rolled and cast building materials; rails and other metallic materials for railway tracks; chains (except driving chains for vehicles); cables and wires (nonelectric); locksmiths' work; metallic pipes and tubes; safes and cash boxes; steel balls; horseshoes; nails and screws; other goods in nonprecious metal not included in other classes; ores.
7. Machines and machine tools; motors (except for land vehicles); machine couplings and belting (except for land vehicles); large size agricultural implements; incubators.
8. Hand tools and instruments; cutlery, forks, and spoons; side arms.
9. Scientific, nautical, surveying and electrical apparatus and instruments (including wireless), photographic, cinematographic, optical, weighing, measuring, signalling, checking (supervision), life-saving and teaching apparatus and instruments; coin or counterfreed apparatus; talking machines; cash registers; calculating machines, fire extinguishing apparatus.
10. Surgical, medical, dental and veterinary instruments and apparatus (including artificial limbs, eyes and teeth).
11. Installations for lighting, heating, steam generating, cooking, refrigerating, drying, ventilating, water supply and sanitary purposes.
12. Vehicles; apparatus for locomotion by land, air or water.
13. Firearms; ammunition and projectiles; explosive substances; fireworks.
14. Precious metals and their alloys and goods in precious metals or coated therewith (except cutlery, forks and spoons); jewellery, precious stones, horological and other chronometric instruments.
15. Musical instruments (other than talking machines and wireless apparatus).
16. Paper and paper articles, cardboard and cardboard articles: printed matter, newspapers and periodicals, books; bookbinding material; photographs; stationery, adhesive materials (stationery); artists' materials; paint brushes; typewriters and office requisites (other than furniture); instructional and teaching material (other than apparatus); playing cards; printers' type and cliches (stereotype).
17. Gutta percha, india rubber, balata and substitutes, articles made from these substances and not included in other classes; plastics in the form of sheets, blocks and rods, being for use in manufacture; materials for packing, stopping or insulating; asbestos, mica and their products; hose pipes (nonmetallic).
18. Leather and imitations of leather, and articles made from these materials and not included in other classes; skins, hides; trunks and travelling bags; umbrellas, parasols and walking sticks; whips, harness and saddlery.
19. Building materials, natural and artificial stone, cement, lime, mortar, plaster and gravel; pipes of earthenware or cement; roadmaking materials; asphalt, pitch and bitumen; portable buildings; stone monuments; chimney pots.
20. Furniture, mirrors, picture frames; articles (not included in other classes) of wood, cork, reeds, cane, wicker, horn bone, ivory, whalebone, shell, amber, mother-of-pearl, meerschaum, celluloid, substitutes for all these materials, or of plastics.
21. Small domestic utensils and containers (not of precious metals, or coated therewith); combs and sponges; brushes (other than paint brushes); brushmaking materials; instruments and material for cleaning purposes, steel wool; unworked or semi-worked glass (excluding glass used in building); glassware, porcelain and earthenware, not included in other classes.
22. Ropes, string, nets, tents, awnings, tarpaulins, sails, sacks; padding and stuffing materials (hair, kapok, feathers, seaweed, etc.); raw fibrous textile materials.
23. Yarns, threads.
24. Tissues (piece goods); bed and table covers; textile articles not included in other classes.
25. Clothing, including boots, shoes and slippers.
26. Lace and embroidery, ribands and braid; buttons, press buttons, hooks and eyes, pins and needles; artificial flowers.
27. Carpets, rugs, mats and matting; linoleums and other materials for covering existing floors; wall hangings (nontextile).
28. Games and playthings; gymnastic and sporting articles (except clothing); ornaments and decorations for Christmas trees.
29. Meat, fish, poultry and game; meat extracts; preserved, dried and cooked fruits and vegetables; jellies, jams; eggs, milk and other dairy products; edible oils and fats; preserves, pickles.
30. Coffee, tea, cocoa, sugar, rice, tapioca, sago, coffee substitutes; flour, and preparations made from cereals; bread, biscuits, cakes, pastry and confectionery, ices; honey, treacle; yeast, baking powder; salt, mustard, pepper, vinegar, sauces, spices; ice.
31. Agricultural, horticultural and forestry products and grains not included in other classes; living animals; fresh fruits and vegetables; seeds; live plants and flowers; foodstuffs for animals, malt.

32. Beer, ale and porter; mineral and aerated waters and other nonalcoholic drinks; syrups and other preparations for making beverages.
33. Wines, spirits and liqueurs.
34. Tobacco, raw or manufactured; smokers' articles; matches.

SERVICES

35. Advertising and business.
36. Insurance and financial.
37. Construction and repair.
38. Communication.
39. Transportation and storage.
40. Material treatment.
41. Education and entertainment.
42. Miscellaneous.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Date: May 14, 1973.

Approved:
BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

(Pub. in 38 F.R. 14681, June 4, 1973)

[911 O.G. TM 210 (June 26, 1973)]

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(333) TRADEMARK REGISTRATION TREATY

At the conclusion of the Vienna Diplomatic Conference on industrial property, the Trademark Registration Treaty was signed on June 12, 1973 for the United States. This Treaty is designed to simplify the procedures for obtaining international registration of trademarks for United States companies doing business abroad.

The Treaty was unanimously adopted at the final plenary session. In addition to the United States, the United Kingdom, the Federal Republic of Germany, Italy, Portugal, Hungary, San Marino and Monaco also signed. Some forty-six countries were represented at the Conference. In their closing statements most of the other delegations present indicated their hope to sign before the end of the year. The Treaty remains open for signature through December 31, 1973. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession.

The negotiations at Vienna represent the climax of the work of several committees of experts and working groups which have met at Geneva since 1970 with the assistance of the World Intellectual Property Organization (WIPO). The U.S. delegation to the Vienna Conference was composed of officials from the Department of State, the U.S. Patent Office and advisors from the private sector. Previous versions of the proposed Treaty were published on February 22, 1972; September 19, 1972; and February 20, 1973; in the OFFICIAL GAZETTE of the U.S. Patent Office. Published in this issue is the complete text of the Trademark Registration Treaty and its Regulations, as adopted by the Conference. For convenience, in addition to the text of the Articles and Regulations as adopted there is included a table of contents at the end of each section.

Additional copies of this material are available upon request to the Commissioner of Patents.

ROBERT GOTTSCHALK,
June 22, 1973 *Commissioner of Patents.*

[912 O.G. TM 205 (July 24, 1973)]

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(334) FORM PARAGRAPHS AND PRINTED FORMS IN TRADEMARK CASES

In September of 1971, the Trademark Examining Operation began utilizing form paragraphs for the purpose of accelerating the preparation and typing of first action Office letters and to increase the uniformity in the application of the Trademark Statute and the Rules by Trademark Examiners.

The form paragraphs presently total 136 and cover those objections and grounds for refusal which are commonly relied upon by Trademark Examiners in first Office actions. In some cases, the paragraphs contain blanks to be filled in by the Examiner. In addition, the Examiner may add additional sentences to the paragraphs.

The form paragraphs have been placed on magentic tapes mounted on automatic typewriters. Where the use of a form paragraph is appropriate, the Examiner identifies the paragraph to be typed by a preassigned number which is used by the typist to effect the automatic typing of the paragraph.

The Examiner may add any additional paragraphs to the letter which are not covered by an appropriate form paragraph, in which case the typist merely manually adds the paragraph to the letter.

The form paragraphs are amended from time to time to incorporate improvements in the wording as the need for such becomes apparent. Also, new paragraphs are added and old paragraphs eliminated, as experience dictates the need.

In addition, the Office has adopted a printed first action form with check-off boxes to indicate to the applicant the appropriate objection or ground of refusal in first Office actions. This form is used only where it can be used appropriately as a complete first Office action. It is not used in any case to supplement a first Office action incorporating paragraphs not encompassed by the form action. It has been found that the form action is appropriate for use in approximately 15–20% of the first actions going out of the Office.

The form first action is also designed for use as a notice of the publication of an application for opposition.

Copies of the text of the form paragraphs used with the automatic typewriters and copies of the first action form may be obtained by addressing a request for the same to the "Commissioner of Patents, Washington, D.C. 20231."

Date: June 29, 1973.

RENE D. TEGTMEYER,
Assistant Commissioner for Trademarks.

[912 O.G. TM 310 (July 31, 1973)]

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(335) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER 1—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Lawful Use for Supplemental Register and Size of Facsimiles

The Patent Office is revising §§ 2.47 and 2.57 of the trademark rules of practice. Section 2.47 is being revised to set forth that the year's use which is the basis for registration on the Supplemental Register must be lawful use. Existing § 2.47 states that the year's use for the Supplemental Register must be "continuous use," whereas section 23 of the Trademark Act of 1946 specifies that such use must be "lawful use." The purpose of this revision is to conform the wording of § 2.47 to the wording of the statute. This revision does not effect any change in practice, as in applying the rule the term "continuous use" has been treated as having the same meaning as the term "lawful use" in the statute.

Section 2.57 is being revised to set forth that facsimile-specimens are not to exceed 8½ inches wide and 13 inches long. Existing § 2.57 states that facsimiles shall be not larger than specified for the drawing. That statement is now incorrect due to a recent amendment of the drawing length to 11 inches. The purpose of this revision is to correct the wording of §2.57, and to conform the wording of rule 2.57 to the wording of § 2.56 (Specimens) which has already been amended to specify that specimens are not to exceed 8½ inches wide and 13 inches long.

Since these revisions impose no burden on any person, notice and public procedures thereon are deemed unnecessary.

Therefore, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123), and section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6, as amended October 5, 1971, 85 Stat. 364), Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is hereby revised as follows:

1. Section 2.47 is revised to read as follows:

§ 2.47 *Supplemental register.*

In an application to register on the Supplemental Register, the application shall so indicate and shall specify that the mark has been in lawful use in commerce, specifying the

nature of such commerce, by the applicant for the preceding year, if the application is based on such use. When an applicant requests registration without a full year's use of the mark, in accordance with the last paragraph of section 23 of the act, the showing required must be separate from the application.

(Sec. 23, 60 Stat. 435; 15 U.S.C. 1091)

2. Section 2.57 is revised to read as follows:

§ 2.57 *Facsimiles.*

When, due to the mode of applying or affixing the trademark to the goods, or to the manner of using the mark on the goods, or to the nature of the mark, specimens as above stated cannot be furnished, five copies of a suitable photograph or other acceptable reproduction, not to exceed 8½ inches wide and 13 inches long, and clearly and legibly showing the mark and all matter used in connection therewith, shall be furnished.

Effective date. These revisions shall become effective on July 16, 1973.

Dated: July 5, 1973.

RENE D. TEGTMEYER,
Acting Commissioner of Patents.

Approved:
BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 73-14453; Filed 7-13-73; 8:45 am]

Published in 38 F.R. 18876; July 16, 1973

[913 O.G. TM 2 (Aug. 7, 1973)]

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(336) PUBLIC ADVISORY COMMITTEE FOR TRADEMARK AFFAIRS

Meeting

The Public Advisory Committee for Trademark Affairs was established by the Secretary of Commerce to advise the Patent Office of the Department of Commerce on steps which can be taken in order to increase the efficiency and effectiveness of the administration of the Trademark Act and to provide a continuing source of knowledge from the private sector to the Government in the field.

The next meeting will be held on March 28th and 29th, 1974, at the Morgan Guarantee Bank, New York City, New York, beginning at 9 a.m. each day in the Board Room.

The following agenda is to be considered:

1. Improved systems for recordation and retrieval of information relating to trademark registrations and improved systems for keeping records and production information.
2. Continuation of the WIPO Working Group on Mechanized Trademark Searching.
3. Examiners' training course.
4. Examiners' field trip program.
5. Quality Review Program.
6. Training of examiners in the International Classification System.
7. Status of the Mail Room and recommendations relating thereto.
8. Subcommittee report on Section 8 requirements re specimens, use, and the notice to registrants.
9. Report on the status of Trademark Operations and implementation of the prior Advisory Committee recommendations relating thereto with particular emphasis on recommendations not implemented relating to organization, processing and search room matters.
10. Review of status and content of the new Trademark Manual of Examining Procedures.

The membership of the Advisory Committee consists of nine members of the Patent Office—Trademark Affairs Committee of the United States Trademark Association.

Meetings of the Advisory Committee are open to the public. Public attendance, depending on available space, may be limited to those persons who have notified the Advisory Committee Management Officer in writing, prior to the meeting, of their intention to attend the March 28–29 meeting.

Any member of the public may file a written statement with the Committee before, during, or after the meeting, and, to the extent that time for the meeting permits, the Committee Chairman may allow public presentation of oral statements at the meeting.

All communications regarding this Advisory Committee Meeting should be addressed to Mr. Rene D. Tegtmeyer, Committee Management Officer for Trademark Affairs, Room 3–11D27, U.S. Patent Office, Washington, D.C. 20231.

Dated: March 5, 1974.

C. MARSHALL DANN,
Commissioner of Patents.

Approved: March 15, 1974.

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[F.R. Doc. 74-6379; Filed 3-19-74; 8:45 a.m.]

Published in 39 F.R. 10460; Mar. 20, 1974

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(337) CHANGES IN FORMAT FOR PUBLISHING TRADEMARKS FOR OPPOSITION

Because of the adoption of the International classification of goods and services by the United States as of September 1, 1973 (see OFFICIAL GAZETTE of June 26, 1973, 911 O.G. TM 210), it is necessary to change the arrangement in the OFFICIAL GAZETTE of the marks published for opposition.

Beginning with the issue of May 7, 1974, the section of the OFFICIAL GAZETTE entitled "Marks Published for Opposition" will be divided into four sections instead of the present two sections. (For the preceding change from one to two sections, see OFFICIAL GAZETTE of October 13, 1964, 807 O.G. TM 51.) Sections 1 and 2 will be according to international classification and will contain marks in applications filed on or after September 1, 1973, and Sections 3 and 4 will be according to prior United States classification and will contain marks in applications filed on or before August 31, 1973.

In Section 1, all marks presented in combined applications filed on or after September 1, 1973 for registration in more than one international class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the international class numbers, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In Section 2, all marks presented in applications filed on or after September 1, 1973 for registration in a single class will be published in international class order.

In Section 3, all marks presented in combined applications filed on or before August 31, 1973 for registration in more than one prior United States class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the prior United States class numbers and titles, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In section 4, all marks presented in applications filed on or before August 31, 1973 for registration in a single class will be published in the prior United States class order.

The following explanation will appear under the heading "Marks Published for Opposition":

> The following marks are published in compliance with section 12(a) of the Trademark Act of 1946. Applications for the registration of marks in more than one class have been filed as provided in section 30 of said act as amended by Public Law 772, 87th Congress, approved Oct. 9, 1962, 76 Stat. 769. Opposition under Section 13 may be filed within thirty days of the date of this publication. See Rules 2.101 to 2.105.
>
> A separate fee of twenty-five dollars for opposing each mark in each class must accompany the opposition.

Sections 1 through 4 will appear immediately after the above explanation, the sections being designated as follows:

Section 1. International classification—Application in more than one class

Section 2. International classification—Application in one class

Section 3. Prior United States classification—Application in more than one class

Section 4. Prior United States classification—Application in one class

The same procedure of dividing into four sections will be followed in the notice of the issuance of registrations on the Supplemental Register.

RENE D. TEGTMEYER,
Mar. 22, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 122 (Apr. 16, 1974)]

(338) WORDING IN VERIFICATION OR DECLARATION OF TRADEMARK APPLICATION

Applicants and attorneys are requested to use the following wording in the part of the verification or declaration of the trademark application which indicates the signer's belief that the mark applied for does not resemble another person's mark:

—that no other person, firm, corporation, or association, to the best of his knowledge and belief, has the right to use such mark in commerce either in the identical form thereof or in such near resemblance thereto *as to be likely, when applied to the goods of such other person, to cause confusion, or cause mistake, or to deceive.*—

The wording emphasized conforms to the present language of both Sections 1(a)(1) and 2(d) of the Trademark Act of 1946.

Some applicants and attorneys, instead of using the wording emphasized above, are still using the now obsolete wording "as might be calculated to deceive" which was promulgated in the forms under the Trademark Act of 1905 and inadvertently continued by the Act of 1946 up to October 1962 in Section 1(a)(1) and in the forms connected with the Act. Section 1(a)(1) of the 1946 Act was amended by Act of October 9, 1962 (Public Law 772, 87th Congress, 76 Stat. 769) to conform it to the language of Section 2(d) of the 1946 Act, since the language of Section 2(d) reflects the thinking at the time the 1946 Act was written. The wording of the trademark forms for the 1946 Act has also been amended appropriately.

It is desirable that proper wording be used. However, since the differences in wording referred to above are considered to be differences of form rather than of substance, Examiners will not require new verifications or declarations. When the obsolete wording is observed and a letter is to be written for other reasons, Examiners will at that time call attention to the fact that the wording is obsolete and should be modified in applications in the future.

RENE D. TEGTMEYER,
Mar. 25, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 186 (Apr. 23, 1974)]

(339) MAIL DELAYS AND PETITIONS TO REVIVE (TRADEMARKS)

Since applications that become abandoned unintentionally present burdens to both the Patent Office and the applicant, a simplified procedure has been devised to alleviate these burdens when the abandonment results from a delay in the mails. This procedure (which is similar to the procedure adopted for patent applications at 910 O.G. 402 and 910 O.G. TM 76) provides for an automatic petition to revive.

When a trademark communication which falls within the circumstances enumerated below is mailed to the Patent Office more than three full days prior to the due date, a conditional petition may be attached to the communication. If the communication is received in the Patent Office after the due date and the application becomes abandoned, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee, and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his attorney stating that the communication and petition were either placed in the United States mail as first class or air mail or placed in the mail outside the United States as air mail. Since mail handled in this manner may reasonably be expected to reach the Patent Office by the due date, any mail delays beyond such time will be considered to constitute unavoidable delay and sufficient cause to grant a petition to revive (Section 12(b) of the Trademark Act of 1946).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action which places the application in condition for publication or issue.
3. A notice of appeal and requisite fee.
4. An appeal brief.

A suggested declaration form for the petition is shown below:

Applicant:
Serial No.: Petition to Revive
Date Filed:
Mark:

I hereby declare that the attached communication is being deposited in ( ) the United States mail as first class or air mail, or ( ) the mail outside the United States as air mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on _____, which date is more than three full days prior to the due date, at _____ (Location), by _____ (Name of individual).

In the event that such communication is not timely filed in the Patent Office, it is requested that this paper be treated as a petition to revive and that the delay in prosecution be held unavoidable.

The petition fee is authorized to be charged to Deposit Account No. _____ in the name of _____.

The undersigned declares further that all statements made herein of his own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or document or any registration resulting therefrom.

Date: (Signature of applicant or applicant's attorney)

And

Date: (Signature of person mailing, if other than the above)

Normal petition practices are not affected in those situations where this procedure is either not elected or not appropriate, nor does this procedure bar the granting of a petition in different fact situations where justified.

RENE D. TEGTMEYER,
Mar. 21, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 126 (Apr. 23, 1974)]

(340) SIGNATURE TO AMENDMENT TO SUPPLEMENTAL REGISTER

Heretofore, in amending a trademark application from the Principal Register to the Supplemental Register and there had not been a full year of use prior to the date the application was filed, the statement in the amendment, to the effect that the mark had been in use for a year, was required to be signed by the applicant.

Effective with this notice, the amendment may hereafter be made by the attorney, and the signature of the applicant normally will not be required merely because some of the year of use necessary for registration on the Supplemental Register occurred after the application was originally filed on the Principal Register. If the Examiner has basis for believing that there is some reason for further inquiry or signature by applicant, the Examiner may of course take appropriate action.

The filing date which will be effective for an application so amended will be the date the amendment is filed, as the application when originally filed was not sufficient for registration on the Supplemental Register. Trademark Rule 2.75.

RENE D. TEGTMEYER,
Apr. 4, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 250 (Apr. 30, 1974)]

(341) TRADEMARK APPLICATIONS UNDER SECTION 44 WITHOUT SPECIMENS AND USE

A significant number of applications are being filed under Section 44 of the Trademark Act of 1946 without specimens and without a statement of use, on the basis of the decision in *John Lecroy & Son, Inc.* v. *Langis Foods Limited*, 177 USPQ 717 (TT&A Bd. 1973), so that it appears desirable to provide the public with information as to the manner in which the Patent Office is handling such applications. This procedure has been incorporated into the Trademark Manual of Examining Procedure. However, since the Manual is not yet ready for distribution, this notice is being published at this time.

The memorandum which is being sent with the filing receipt to each applicant who falls within the above circumstances explains the procedure and reads as follows:

U.S. Department of Commerce
PATENT OFFICE

Trademark Application Filed Under Section 44
of the Act of 1946;
(No Allegation of Use and No Specimens)

MEMORANDUM TO ACCOMPANY FILING RECEIPT

The decision in *John Lecroy & Son, Inc.* v. *Langis Foods Limited*, 177 USPQ 717, rendered by the Trademark Trial and Appeal Board on May 7, 1973, appears to indicate that use and specimens should no longer be requisites for applications under Sections 44(d) and 44(e) of the Trademark Act. That decision has, however, been appealed to the United States District Court for the District of Columbia.

In view of the civil action filed in this case, use and specimens as requirements for such applications are not being eliminated. The Office is therefore assigning to the above-identified application a filing date which is conditional upon the ultimate decision in the above case of *Lecroy* v. *Langis*, and is mailing a filing receipt. However, this application will not be forwarded for examination until the decision in the case becomes final. A copy of the drawing will be placed in the search room with the following stamped thereon: "Withheld from Examination—Sec. 44."

The applicant has the following alternatives:

If applicant files specimens and a statement that the mark is in use (such statement being verified or in the form of a declaration under Rule 2.20), the application will be forwarded for examination with a filing date of the date of receipt of the specimens.

If a statement of use and specimens are not filed, the application will be withheld from examination until termination of the appeal of the above decision. If the decision is affirmed, the application will be forwarded for examination. If the decision is reversed, the application will become an informal application and the papers will be returned.

C. M. WENDT,
Mar. 22, 1974. *Director, Trademark Examining Operation.*

RENE D. TEGTMEYER,
Apr. 4, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 250 (Apr. 30, 1974)]

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(342)

TITLE 37

Patents, Trademarks, and Copyrights

CHAPTER I

PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1

RULES OF PRACTICE IN PATENT CASES

PART 2

RULES OF PRACTICE IN TRADEMARK CASES

Addition of Metric (S.I.) Equivalents

The Commissioner of Patents is revising §§ 1.84, 1.253, 2.31, 2.52, 2.56 and 2.57 of the rules of practice to set forth and encourage use of the metric system of measurements in papers submitted to the Patent Office. These changes provide dual dimensions in both the patent and trademark rules of practice.

Since the revision of these sections makes no change in practice, and merely adds an indication of the metric equivalents, procedure for public comment thereon is deemed unnecessary. Therefore, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), as amended October 5, 1971 (85 Stat. 364), and section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123), 37 CFR Parts 1 and 2 are hereby amended as follows:

3. Section 2.31 is revised to read as follows:

§ 2.31 Application must be in English.

The application must be in the English language and plainly written on but one side of the paper. It is deemed preferable that the application be on legal or letter-sized paper, typewritten double spaced, with at least a one and one-half inch (3.8 cm.) margin on the left-hand side and top of the page.

4. In § 2.52, paragraphs (c) and (d) are revised to read as follows:

§ 2.52 Requirements for drawings.

* * * * * * *

(c) *Size of paper and margins.* The size of the sheet on which a drawing is made must be 8 to 8½ inches (20.3 to 21.6 cm.) wide and 11 inches (27.9 cm.) long. One of the shorter sides of the sheet should be regarded as its top. When the figure is longer than the width of the sheet, the sheet should be turned on its side with the top at the right. The size of the mark must be such as to leave a margin of at least 1 inch (2.5 cm.) on the sides and bottom of the paper and at least 1 inch (2.5 cm.) between it and the heading.

(d) *Heading.* Across the top of the drawing, beginning one inch (2.5 cm.) from the top edge and not exceeding one-fourth of the sheet, there should be placed a heading, listing in separate lines, applicant's name, applicant's post office address, the dates of first use, and the goods or services recited in the application (or typical item of the goods or services if a number are recited in the application). This heading may be typewritten.

* * * * * * *

5. Section 2.56 is revised to read as follows:

§ 2.56 Specimens.

The application must include five specimens of the trademark as actually used on or in connection with the goods in commerce. The specimens shall be duplicates of the actually used labels, tags, or containers, or the displays associated therewith or portions thereof, when made of suitable flat material and of a size not to exceed 8½ inches (21.6 cm.) wide and 13 inches (33.0 cm.) long.

* * * * * * *

6. Section 2.57 is revised to read as follows:

§ 2.57 Facsimiles.

When, due to the mode of applying or affixing the trademark to the goods, or to the manner of using the mark on the goods, or to the nature of the mark, specimens as above stated cannot be furnished, five copies of a suitable photograph or other acceptable reproduction, not to exceed 8½ inches (21.6 cm.) wide and 13 inches (33.0 cm.) long, and clearly and legibly showing the mark and all matter used in connection therewith, shall be furnished.

Effective date. These amendments shall become effective May 6, 1974.

Dated: March 25, 1974.

C. MARSHALL DANN,
Commissioner of Patents.

Approved: March 25, 1974.

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc.74-7796 Filed 4-3-74; 8:45 am]

[922 O.G. TM IX, X, XI, XII (May 14, 1974)]

(343) TRADEMARK REGISTRATION TREATY

Trademark Act of 1946

The text of the Trademark Registration Treaty (TRT), signed on June 12, 1973, was reproduced in the OFFICIAL GAZETTE of July 24, 1973 and three post-conference documents were published in the OFFICIAL GAZETTE of March 12, 1974. The questions of United States ratification and of the legislation which would be necessary for its implementation in the United States are now under study in the Patent Office. Interested persons and organizations have been requested to submit their views on these questions to the Patent Office prior to September 1, 1974.

Reproduced below is an outline of the changes in the Trademark Act of 1946 which might be required, or desirable, if the TRT is ratified and implemented. This outline is intended as a guideline to possible legislation designed to implement the requirements of the Treaty and to provide equivalent benefits to national applicants.

In regard to a few of the provisions, alternatives have been indicated. Where this is done, the order of their presentation herein does not necessarily indicate any order of preference.

This material, as well as that previously published, is made available in order to assist interested persons in their own studies of the question of ratification by the United States and implementing legislation rather than constituting a position of the Patent Office on these questions.

C. MARSHALL DANN,
Apr. 29, 1974. *Commissioner of Patents.*

OUTLINE

Introduction

This paper is an outline of possible changes in the Trademark Act of 1946 (60 Stat. 427; 15 U.S.C. 1051 et seq.), as amended, which may be required or desirable if the Trademark Registration Treaty, signed by the United States and thirteen other countries as of December 31, 1973, is ratified and implemented.

The subject is dealt with in two parts. Part I outlines changes in the domestic trademark statute which would be applicable in the case of national applications to register marks in the United States Patent Office. Part II concerns additional provisions which would be necessary in order to assimilate the proposed Treaty to this national law.

For convenience, reference is made, following some of the sections, to the article of the Treaty which requires or gives rise to the change under consideration.

PART I—CHANGES IN THE TRADEMARK ACT OF 1946, AS AMENDED

A. *Requiremeents for Registration on the Principal Register*

1. As an alternative to actual use, a trademark, service mark, certification or collective mark, can be registered by a person based on a declared intention to use the mark in commerce. [Article 19(3), (4)]. Special use requirements are applicable to registrations secured on this basis. (See B below).
2. As an alternative to signing by the applicant, an application may be signed by a duly appointed representative. (Article 26). Present qualifications for representation before the Patent Office (attorney admitted to practice in a State or District of Columbia) continue to apply, however.
3. Verified statement of the claim to ownership is no longer required (Article 5).

B. *Special Requirements for Intent Applicants/Registrants*

1. (*a*) Applicant/registrant must commence use of the mark in commerce within three years of filing date and must declare such commencement of use during the fourth year, including the same details, etc., use dates, label specimens, etc.) as those declared by a use applicant at time of filing. [Article 19(3)].
   (*b*) Time period for filing the declaration may be shortened (three months from date of notice) on petition of interested person if the mark is involved in any proceeding under the Act on or after date of expiration of the three year use moratorium.
   Alternative: Shorter period for filing the declaration (e.g., 3½ years) and delete (*b*) above.
2. Consequence of failure to file an acceptable declaration within the prescribed time limit is cancellation of the registration or, if still pending, refusal of the application. Consequence of compliance as to part only of the goods and/or services is limitation of the registration or application to those goods and/or services. [Article 19(3)].
3. Time period for commencement of use may be extended beyond three years only upon showing of special circumstances which justify non-use.
4. Where later intent application(s) for same mark is (are) filed by the same or a related person prior to four (*Alternative*: five) years from the filing date of the earliest one, the period for commencement of use (three years) is counted from the filing date of earliest application. This provision means that a person cannot abuse the intent to use provisions by filing successive intent applications at or close to the expiration of successive three year periods, securing a new three year moratorium on use requirements with each new case. [Article 19(3)].

C. *Related Company Provision*

A minor change provides that intended use as well as use may inure to benefit of a related company. Thus, for example, an intent application by a parent company would be valid if the evidence supporting the intent concerned adoption of the mark by and related activities of a controlled subsidiary.

D. *Registration on the Principal Register*

1. If a registration based on an intent application is issued before the declaration of use is filed, the certificate of registration indicates this fact in lieu of the dates of use.
2. *Date of registration* is the same date as the filing date, which is defined as the date on which all basic elements of an application are received by the Patent Office. (See Trademark Rule 2.21.) Certificate also indicates the *date of issue*, defined as the date of the OFFICIAL GAZETTE in which notice of the issuance of the registration is published. [Article 11(2)].
3. A certificate of registration is prima facie evidence of the validity of the registration, the right of the registrant to exclude any other person from securing or maintaining a confusingly similar registration, and the exclusive right to use only for those goods or services in respect of which the mark is declared in the certificate of registration, or in a subsequently filed declaration of use, to be in use in commerce.

E. *Duration of Registration, Sixth Year Affidavit and Renewal*

1. Term of registration and of renewal is changed from twenty years to ten years, counted from the *date of registration*. [Article 17].
2. Sixth year affidavit of use remains applicable to all registrations, with its due date counted from *date of issue* of the registration (Change only in terminology).
   Alternative: Same, except that due date is counted from *date of registration*.
3. Sixth year affidavit must show use *in commerce*.
4. A renewal application need not be verified. (Article 17).
5. A late renewal application may be filed within six months (rather than three) after the date of expiration of the term. (Article 17).

F. *Assignment*

An application or registration based on intent is not assignable prior to filing the declaration of use. Exception: successor to the entire business of the original applicant.

Alternative: Assignments of registered or applied for marks without good will are valid.

G. *Examination Procedure and Oppositions*

1. Time for response to office actions is reduced from six months to three months. Purpose is to expedite completion of ex parte examination in maximum number of cases prior to cut-off. (See 3 below).
2. No mark may be refused ex parte for a reason *not* communicated to applicant prior to fifteen months from the filing date. This limitation is not applicable to a refusal determined by a decision of the TTAB or a court. [Article 12(2)].

3. Cut-off at twelve months from filing date for publication of the mark for opposition, whether or not the ex parte examination, including any appeal therefrom, has been completed. If an opposition is filed against a still pending case, full opposition proceedings are deferred until completion of the ex parte examination. If the opposed mark is eventually determined to be registrable, then full opposition proceedings are commenced, unless the opposer withdraws. [Article 12(2)].

Alternative: Publish all marks promptly after filing and receive oppositions concurrently with the ex parte examination, deferring full opposition proceedings (as above), however, until completion of the ex parte examination.

4. Oppositions need not be verified and may be filed by a duly authorized attorney.
5. Time to oppose may not be extended to a date later than fifteen months, counted from the filing date. [Article 12(2)].

H. *Cancellation of Registrations*

1. A petition to cancel need not be verified and may be filed by a duly authorized attorney.
2. The time period for cancellation based on unrestricted grounds (i.e., 5 years) is counted from the *date of issue* of the registration (Change only in terminology).

I. *Incontestability*

The time period for incontestability is counted from the *date of issue* of the registration (Change only in terminology).

J. *Appeals*

Minor change provides for an appeal from a refusal to accept a declaration of use.

K. *Constructive Notice*

Constructive notice is applicable from *date of issue* of registration (Change only in terminology).

Alternative: Constructive notice applicable as of the date of first publication.

L. *The Supplemental Register*

1. Special Requirement of one year's use prior to filing date is deleted, making Supplemental Register registrations subject to the same use requirements, i.e., use or intention to use, as registrations on the Principal Register. [Article 19(3)].
2. Petition to cancel a Supplemental Register registration need not be verified and can be filed by a duly authorized attorney.
3. Non-use is a ground for cancellation only after expiration of three years from the filing date. [Article 19(3)].

M. *Infringement Remedies, Evidence and Priority*

1. Owner of a registration based on an intent application may not start any action for infringement until the declaration of use has been filed and accepted. Any remedies for infringement of registered marks based on intent are applicable only to period after commencement of continuing use. [Article 19(3)].
2. A certificate of registration is prima facie evidence of exclusive right to use only for those goods or services in respect of which the mark is declared in the certificate of registration, or in a subsequently filed declaration of use, to be in use in commerce. (Consistent wtih M 1 above).
3. In an action based on an incontestable registration, defense based on innocent adoption and continuous use (i.e., section 33(b)(5)) is subject to the condition that the defendant must be innocent of knowledge not only of prior use of the registrant, but, where applicable, of registration based upon a previously filed declaration of intention to use.
4. For the purpose of determining priority of rights in *any* proceeding under the Act, an application or registration based on intent to use is accorded the same effect *as if* the applicant or registrant had commenced use of the mark in commerce on the filing date. Except where priority is accorded in a Patent Office proceeding, or in an appeal therefrom, prior to three years from the filing date, a condition to the according of priority on this basis is filing and acceptance of the declaration of use. [Article 19(3)].

N. *International Convention Provisions*

1. The waiver of use requirements for an application based on registration of the mark in a country with which we have a treaty relationship is deleted. Since all applicants have the alternative of securing a registration based on an intention to use the mark in commerce, the waiver of use requirements is no longer necessary and such applications are subject to all requirements of the Act. Similarly, the first sentence of section 44(c) is deleted, being unnecessary in view of the general limitation on actions for infringement based on unused marks. (See M 1).
2. A minor change in section 44(d)(4) provides that a registration based on intent is not subject to the limitation of this subparagraph if the declaration of use has been accepted prior to issuance of the registration.

O. *Definitions*

1. The words "or intended to be used" are inserted in several of the definitions to take into account the new basis for registration.
2. Filing date, date of issue and date of registration are defined. (See D 2). Careful definition of "filing date" is important since it is the basis for determining the priority of intent applications. (See M 4).
3. The definition of abandonment is modified to the extent that non-use for two consecutive years is prima facie abandonment only if the two year period terminates on a date later than the date of expiration of three year use moratorium. Also, failure to commence use within the prescribed period, coupled with absence of any intention to commence use, constitutes abandonment. [Article 19(3)].

PART II—IMPLEMENTATION OF TRADEMARK REGISTRATION TREATY

A. *Definitions*

For purposes of the Act, an international application, international registration or later designation under the Trademark Registration Treaty (TRT) is defined to include only one which designates the United States; contains a declaration of intention to use the mark in commerce with or in the United States (or is accompanied by a declaration of actual use of the mark in such commerce); and is published and communicated to the Patent Office as required by the TRT. [Articles 10, 11, 19(4)].

B. *Effect in the United States of Proceedings Under the Treaty*

1. International applications, international registrations and later designations as defined above (See A), and the recordings related thereto, are accorded all of the effects, and their applicants or owners are entitled to all of the benefits, in the United States provided by the TRT, subject to all of the requirements of the TRT and, except as listed below, of the Trademark Act.
2. Exceptions to full application of the Trademark Act are:
   (*a*) The fee referred to in section 1 is waived. (*Note:* A fee equivalent to the U.S. application fee is paid to the International Bureau and the amounts of the fees collected on behalf of the United States are paid to the U.S. in lump sums.) [Article 19(1)].
   (*b*) The requirement to designate an agent for service in the application [i.e., present section 1(d)] is waived, provided that such person must be designated on or prior to date on which the owner replies to any communication by the examiner or otherwise institutes or defends any proceeding under the Act. Until such person has been designated, notices or process may be served upon the Commissioner. Consequence of failure to designate such person on or prior to the first to occur of the above

events is cancellation of any effect of the international registration in the United States. [Article 19(7)].

(c) A certificate of registration issued by the Patent Office based on an international registration shall also indicate the number and date of the international registration to which it relates.

(d) The *filing date* under the Act of an international registration is the international registration date. The *date of issue* is the date on which registration effect in the United States of an international registration comes into existence pursuant to a notice to this effect published in the OFFICIAL GAZETTE, as in the case of publication of issuance of a national registration. [Article 11(1)(2)].

(e) The recording of a change in ownership, or in the name of the owner, of an international registration shall not be accorded any effect as the recording of an assignment unless, within three months from the date of publication of such recording under the TRT, instruments of assignment conforming to the requirements of the Trademark Act are recorded in the Patent Office. [Article 14(4)].

(f) Renewal of the effect of an international registration in the United States by the International Bureau is not subject to the requirements of section 9, provided that the registrant shall file in the Patent Office, prior to the expiration of six months counted from the starting date of the term of renewal, a declaration as to use of the mark in commerce. Consequences of failure to file an acceptable use declaration are the same as in the case of failure to file or filing of an unacceptable fourth year declaration of use (See Part I, B 2).

Note: The renewal fee is collected and distributed in the same way as the filing fee. (See (a) above.) [Article 17, 19(1), 19(3)].

C. *Authority of the Commissioner*

The Commissioner is authorized to accord and deny effects, communicate notifications, make attestations, decide petitions, determine the amount of and receive payments of fees, and perform all other acts as provided by the TRT, subject to the requirements thereof.

D. *Notifications*

The Commissioner is required to effect all required notifications promptly. Where the time limitation of the TRT is stated in terms of the date of receipt, the notification shall be transmitted to the International Bureau no later than 14 days from the due date via Registered Air Mail.

* * * * *

Final Note: The above outline does not include final provisions concerning the effective date of certain changes. Generally, changes that might have an effect on existing rights would be effective only as to applications filed on or after the effective date of the amended Act.

[922 O.G. TM 1, 2, 3 (May 28, 1974)]

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(344) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

PART 6—CLASSIFICATION OF GOODS AND SERVICES UNDER THE TRADEMARK ACT

International Trademark Classification; Correction

In FR Doc. 73-10996 appearing at page 14681 in the issue of Monday, June 4, 1973 (38 FR 14681), the language in the tenth line of the sixth paragraph of the preamble reading "mark as registered" should read "application was filed," and the language in the sixth line of revised § 2.85(b) reading "registration was granted" should read "application was filed."

Dated: April 26, 1974.

C. MARSHALL DANN,
Commissioner of Patents.

Approved: May 3, 1974.

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 74-10822; Filed 5-9-74; 8:45 am]

Published in 39 F.R. 16885, May 10, 1974

[923 O.G. TM 144 (June 18, 1974)]

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(345) TRADEMARK MANUAL OF EXAMINING PROCEDURE NOW AVAILABLE

The Trademark Manual of Examining Procedure (designated in brief as TMEP) may be ordered on a subscription basis from the Superintendent of Documents at the following address:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

The price of a subscription is $8.10, plus $2.05 for foreign mailing. Payment should accompany the order. (Orders should *not* be placed with the Patent Office.)

The purpose of the Trademark Manual of Examining Procedure is to provide an authoritative reference work on practices and procedures relative to prosecution of applications to register marks in the Patent Office. Revisions necessary to keep the Manual current will be made by issuance of sets of revision pages from time to time as part of the Manual subscription. Early information as to changes in the Manual will be given prior to issuance of revision pages by notices in the OFFICIAL GAZETTE or by change notices furnished to Manual subscribers.

The Trademark Directives which were issued as Series 1 (pre-Manual) pending publication of the Manual, have been incorporated in the Manual, and there will be no further Directives in that Series. (For announcements as to the pre-Manual Directives, see OFFICIAL GAZETTES of August 31, 1971, Vol. 889, No. 5, and April 4, 1972, Vol. 897, No. 1.)

RENE D. TEGTMEYER,
May 29, 1974. *Assistant Commissioner for Trademarks.*

[923 O.G. TM 204 (June 25, 1974)]

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(346) SHORT TITLES FOR INTERNATIONAL TRADEMARK CLASSES

The United States Patent Office will, effective immediately, associate the following word titles with the respective international trademark class numbers:

Goods

1 Chemicals
2 Paints
3 Cosmetics and cleaning preparations
4 Lubricants and fuels
5 Parmaceuticals
6 Metal goods
7 Machinery
8 Hand tools
9 Electrical and scientific apparatus
10 Medical apparatus
11 Environmental control apparatus
12 Vehicles
13 Firearms
14 Jewelry
15 Musical instruments
16 Paper goods and printed matter
17 Rubber goods
18 Leather goods
19 Non-metallic building materials
20 Furniture and articles not otherwise classified
21 Housewares and glass
22 Cordage and fibers

23 Yarns and threads
24 Fabrics
25 Clothing
26 Fancy goods
27 Floor coverings
28 Toys and sporting goods
29 Meats and processed foods
30 Staple foods
31 Natural agricultural products
32 Light beverages
33 Wines and spirits
34 Smokers' articles

SERVICES

35 Advertising and business
36 Insurance and financial
37 Construction and repair
38 Communication
39 Transportation and storage
40 Material treatment
41 Education and entertainment
42 Miscellaneous

These short titles are not an official part of the international classification. Their purpose is to provide a means by which the general content of numbered international classes can be quickly identified. Therefore the titles selected consist of short terms which generally correspond to the major content of each class but which are not intended to be more than merely suggestive of the content. Because of their nature these titles will not necessarily disclose the classification of specific items. The titles are not designed to be used for classification but only as information to assist in the identification of numbered classes. For determining classification of particular goods and services and for full disclosure of the contents of international classes, it is necessary to refer to the Alphabetical List of Goods and Services and to the names of international classes and the explanatory notes in the volume entitled "International Classification of Goods and Services to Which Trade Marks Are Applied," published by the World Intellectual Property Organization (WIPO). The full names of international classes appear also in Section 6.1 of the Trademark Rules of Practice.

The short titles are being printed in the OFFICIAL GAZETTE in association with the international class numbers under MARKS PUBLISHED FOR OPPOSITION, Sections 1 and 2, under TRADEMARK REGISTRATIONS ISSUED, PRINCIPAL REGISTER, Section 1, and under SUPPLEMENTAL REGISTER, Sections 1 and 2.

Adoption of the international classification by the United States as its system of classification was announced in the OFFICIAL GAZETTE of June 26, 1973 (911 O.G. TM 210).

Date: June 18, 1974.

RENE D. TEGTMEYER,
Assistant Commissioner for Trademarks.

[924 O.G. TM 155 (July 16, 1974)]

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(347) HAND DELIVERY OF TRADEMARK PAPERS

Trademark papers which are not accompanied by fees or by authorization to charge a deposit account, may be filed by hand in the Trademark Docket Section or in the Incoming Mail Section of the Mail and Correspondence Division. However, to avoid confusion concerning money matters, when papers which are accompanied by fees or by authorization to charge a deposit account are filed by hand, they should be delivered only to the window in the Incoming Mail Section of the Mail and Correspondence Division where personnel can immediately refer the money or the charge to the Cashier. Trademark Examiners should not be requested to receive papers for filing (either with or without fees) since there is no convenient procedure by which the Examiners can transmit such papers to proper locations.

If a receipt is desired from the Trademark Docket Section, it may take the form of a duplicate copy of the paper or of a card identifying the paper and the application. The receipt will be date-stamped at the same time as the paper and handed back to the person delivering the paper. If a receipt is desired from the Incoming Mail Section, a card should be used. The card will be date-stamped and handed back to the person delivering the paper.

When a card is used for receipt, it should contain sufficient information to identify the paper and the application clearly, such as applicant's name, the serial number and filing date of the application, the mark, and the title or a description of the paper being filed.

In the discretion of the Assistant Commissioner for Trademarks, or of the Director of the Trademark Examining Operation, or of the Trademark Trial and Appeal Board, papers appropriate for those Offices (such as petitions or briefs) may be filed by hand in such Offices.

The procedure set forth in the notice entitled "Hand-Delivery of Papers" in the OFFICIAL GAZETTE of February 26, 1974 (919 O.G. TM 180) pertains to papers for patent applications. The designation "Examining Group" used in that notice relates to the patent examining area of the Patent Office. (The equivalent designation in the trademark examining area is "Examining Division.")

RENE D. TEGTMEYER,
Aug. 21, 1974. *Assistant Commmissioner for Trademarks.*

[926 O.G. TM 132 (Sept. 17, 1974)]

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(348) TRADEMARK REGISTRATION TREATY POST CONFERENCE INFORMATION

The text of the Trademark Registration Treaty (TRT), signed in 1973 for the United States and 13 other States, was reproduced in the OFFICIAL GAZETTE of July 24, 1973. The substance of post conference documents on the history of the treaty, a brief summary of its provisions and advantages, and explanatory notes on each of the articles, were reproduced in the OFFICIAL GAZETTE of March 12, 1974. In addition, an outline of the possible changes in the "Trademark Act of 1946, As Amended," which may be required or desirable if the Trademark Registration Treaty is ratified and implemented was published in the OFFICIAL GAZETTE of May 28, 1974.

The World Intellectual Property Organization (WIPO), which served as the Secretariat of the Vienna Diplomatic Conference at which the Trademark Registration Treaty was adopted, has now circulated an additional post conference document, consisting of explanatory notes on the regulations under the treaty. These notes are intended to facilitate the reading of the text of the regulations, providing, where a rule refers to certain articles of the treaty or to other rules of the regulations, brief information on those articles or other rules. This document is supplemental, and similar in format, to the one comprising notes on the articles which was published on March 12, 1974.

The Office will supply a photo copy of these explanatory notes on the TRT regulations (TRT/PCD/4, dated July 31, 1974) to any interested person who may request such copy.

C. MARSHALL DANN,
Dated: Sept 17, 1974. *Commissioner of Patents.*

[927 O.G. TM 124 (Oct. 15, 1974)]

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(349) REALIGNMENT OF PATENT OFFICE HANDLING OF OPPOSITION PAPERS

In order to increase efficiency in processing papers, all activities connected with the handling of oppositions have been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board. As a result of the transfer, requests for extension of time to oppose and matters pertinent thereto are now received and processed by the staff of the Trademark Trial and Appeal Board rather than by the staff of the Office of the Director of the Trademark Examining Operation.

No substantial change in procedure in the handling of papers relative to oppositions and extensions of time is contemplated by this realignment of duties in the Patent Office. Reasonable requests for extensions of time to oppose will continue to be granted with liberality particularly if there is no protest by another party and if the parties are negotiating or otherwise exploring bases for settlement, and fees for both verified and unverified oppositions will continue to be required to be filed within the time prescribed for opposing.

RENE D. TEGTMEYER,
Nov. 14, 1974. *Assistant Commissioner for Trademarks.*

[929 O.G. TM 62 (Dec. 10, 1974)]

PATENT NOTICES ALSO PERTINENT TO TRADEMARKS
(Repeated Here for Convenience)

(6) ZIP CODE REMINDER

By Executive Memorandum of June 18, 1965, President Johnson directed all Federal Agencies to take the lead in adopting the ZIP Code system and instructed the Postmaster General to issue regulations governing the use of ZIP Codes by such agencies.

Pursuant to this directive, Section 137.26 has been added to the Postal Manual requiring compliance by Federal Agencies as follows:

1. Effective January 1, 1966, official mailings containing typed or handwritten addresses must include the ZIP Code.
2. Effective January 1, 1967, all Federal Agencies must use the ZIP Code in the addresses on *all* official mail and are required to presort quantity mailings by ZIP code.

TO THIS END, ALL FUTURE LETTERS, COUPONS, AND OTHER PAPERS BEARING THE SENDER'S ADDRESS WHICH ARE MAILED TO THE PATENT OFFICE MUST SHOW THE ZIP CODE DESIGNATION OF BOTH THE SENDER AND THE PATENT OFFICE.

The Patent Office ZIP Code is 20231. This designation should be used when writing to the Patent Office for any matter. In addition, the sender's own ZIP Code designation should be given. The benefits to be gained by the immediate use of ZIP Code are many: positive identification of areas; faster delivery of mail by reducing the number of handlings from point of origin to destination; and easier identification of post office address.

C. A. KALK,
Mar. 22, 1966. *Director of Administration.*

[825 O.G. 428]

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(13) OFFICIAL PATENT OFFICE MAILING ADDRESS REMAINS WASHINGTON, D.C.

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of *any* communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Feb. 20, 1969. *Director of Administration.*

[860 O.G. 662]

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(25) NEW PROCEDURES FOR PROCESSING ORDERS FOR CERTIFIED COPIES WHEN MATERIAL IS NOT AVAILABLE FOR PHOTOCOPYING

The previous practice of the Document Services Division in handling customer's requests for certified copies of material not yet processed in the Application Division has been to return the order to the customer requesting him to reorder 30 days after receipt of his Official Filing Receipt.

In order to improve this procedure, as of August 2, 1971, all requests for certified copies of material that has not been processed in the Application Division and has not been placed on microfiche are processed in the following manner.

1. Each order is given a control number.
2. The customer is notified as follows:
   - *a.* He will receive an acknowledgment of the receipt of his order.
   - *b.* He will be given the assigned control number for ease of reference in case an inquiry is necessary.
   - *c.* He will be informed that his order will be held in the Document Services Division until the copy can be reproduced from microfiche. No definite time can be given.
3. An Advance Order File has been set up in the Service Unit of the Document Services Division and the microfiche is checked daily.

For further service to its customers, the Document Services Division will furnish the Serial Number and Filing Date of the latest application available on microfiche for publication in the OFFICIAL GAZETTE.

ROBERT J. RISH,
Aug. 2, 1971. *Acting Assistant Commissioner for Administration.*

[890 O.G. 301]

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(28) PUBLIC RECORDS CERTIFICATION DESK

The certification desk, located in Crystal Plaza in the Attorneys and Record Room, Building 4, Room 1D01, provides "on-the-spot" certifying service. This desk handles walk-in requests for certified copies of file wrappers, patented applications, patents, and selected papers from patented application files. The usual fee for this service (1.00 per certification) may be applied at this location in the form of a paid cash order form, obtainable at the Cashier's Office adjacent the lobby of building #2.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

[893 O.G. 810]

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(29) CUSTOMER RELATIONS CENTER

A Customer Relations Center, located in Crystal Plaza adjacent to the Public Search Room, Building 4, Rooms A102 and A103, has been established to provide a central customer complaint and inquiry service. The Center is staffed with six highly experienced employees who process inquiries concerning copies of U.S. patent documents previously ordered but not received. This Center handles not only walk-in but telephonic, and written requests for assistance as well. In addition to improving customer relations, this service is intended to relieve the primary customer service areas (Patent Copy Sales, Document Services, and Reference Order Branch), and Patent Office officials, or interruptions and irregular demands on their time.

The telephone number for this service is (703) 557–2003.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

[893 O.G. 807]

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(34) PATENT OFFICE BUSINESS HOURS

This procedure is being published to bring to the attention of the public security provisions concerning the Patent Office premises and Patent Office files.

The public is reminded that the Patent Office working hours are 8:30 a.m. to 5:00 p.m. Monday through Friday, excluding legal holidays in the District of Columbia. Outside these hours, only Patent Office employees are authorized to be in areas of the Patent Office other than the Public Search Rooms. Of course, a member of the public engaged in a discussion of business with an Office employee may be invited by the employee to stay beyond Office hours to conclude the discussion.

The hours for the Public Search Room are 8:00 a.m. to 8:00 p.m., and the hours for the Trademark Search Room

are 8:00 a.m. to 6:00 p.m. Monday through Friday, excluding legal holidays in the District of Columbia.

During working hours, all applicants, attorneys, and other members of the public should announce their presence to the Office personnel in the area of their visit. In the Examining Groups, visitors should inform the group receptionist of their presence before visiting other areas of the Group.

RENE D. TEGTMEYER,
Sept. 27, 1973. *Acting Commissioner of Patents.*

[915 O.G. 1164]

(40) ACCESSIBILITY OF ASSIGNMENT RECORDS

In view of a number of inquiries as to the manner in which Rule 1.12 of the Patent Office Rules of Practice, as amended August 23, 1965 (819 O.G. 443) is to be applied, the procedure which it is planned to follow in certain types of cases is set forth below.

1. Assignments relating to applications for registration of trademarks will be open to public inspection as heretofore.

2. The Office will not open certain parts only of an assignment document to public inspection. If such a document contains two or more items, any one of which, if alone, would be open to such inspection, then the entire document will be open. Thus, if an assignment covers either a trademark or a patent in addition to one or more patent applications, it will be available to the public ab initio; and if it covers a number of patent applications, it will be so available as soon as any one of them is patented. Assignments relating only to one or more pending applications for patent will not be open to public inspection.

3. If the application on which a patent was granted is a division or continuation of an earlier case, the assignment records of that case will be open to public inspection; similar situations involving continuation in part applications will be considered on their individual merits.

4. Assignment records relating to reissue applications will be open to public inspection.

EDWARD J. BRENNER,
Dec. 15, 1965. *Commissioner.*

[822 O.G. 769]

(32) PATENT OFFICE SERVICES

A notice concerning delays in furnishing Certified Copies was published Aug. 8, 1972 (901 O.G. 412). This notice announced the initiation of a special "Expedited Service" for obtaining copies of pending applications promptly. As indicated in the notice, this special service would be terminated upon restoration of our regular service to an acceptable level.

I am pleased to report that our regular service has been restored to an acceptable level and this special program is being terminated.

However, our efforts to improve our services in these areas will continue. We have made progress, but are not resting on that record. We recognize that there are still problems of accuracy and quality in the filling of orders. These are currently being examined in an effort to bring about necessary improvements.

Thank you for your cooperation and understanding during this difficult period.

ROBERT GOTTSCHALK,
May 30, 1973. *Commissioner of Patents.*

[911 O.G. 1130]

(47) REVISION OF "DISCONTINUANCE OF DEPOSIT ACCOUNT SERVICE FOR SALE OF PATENT COPIES"

In view of the difficulties experienced by many of its customers, the Patent Office is revising the Notice appearing in the December 1, 1964, issue of the *Official Gazette of the U.S. Patent Office.* This Notice—Discontinuance of Deposit Account Service for Sale of Patent Copies—is revised to except certain types of patent copy orders.

The Patent Office will now accept lists of fifty (50) or more numbers arranged in numerical sequence to be charged to Deposit Accounts. Service charges, such as Special Handling and Air Mail postage for these orders, may also be charged to Deposit Accounts.

C. A. KALK,
July 15, 1965. *Director of Administration.*

[818 O.G. 1207]

(49) DEPOSIT ACCOUNTS—STATUTORY FEE CHARGES

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and opposition, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdrawing of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically, and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once overdrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
Feb. 23, 1966. *Commissioner.*

[824 O.G. 1200]

(50) PRACTICE IN THE USE OF ACCOUNTS FOR PAYMENT OF STATUTORY FEES

In the OFFICIAL GAZETTES of March 15, 22, and 29, there appeared copies of an announcement by the Commissioner providing for a trial use of accounts established under Rule 25 for the payment of statutory fees. A number of questions have come up in connection with the use of accounts in the payment of these fees prescribed by Public Law 89–83 and, in the interest of uniform practice, publication of a statement is warranted.

A general direction by an applicant or attorney to charge to an account these fees as they arise in any application prosecuted by the applicant, the attorney, or the firm will not be effective for such a purpose, Authority to make charges will be limited to a particular application.

A separate direction to charge shall be filed for each fee. Each such direction to charge a fee shall be transmitted on a separate sheet of paper and, in the case of fees based on modification of claims shall include the best estimate of the fee due. Failure to include such an estimate provides the basis for a refusal to enter any amendment transmitted therewith, as an incomplete response. Where variable fees are

involved inclusion of a direction to charge or credit a deficiency or overpayment would appear appropriate.

An issue fee will be charged to an account until a notice of allowance has been forwarded and a reply to that notice received.

For the purposes of determining the fee due the Patent Office, a claim will be treated as dependent if it contains reference to one other claim in the application. A claim determined to be dependent by this test will be entered if the fee paid reflects this determination. This does not, however, prevent the rejection of such a claim as improper, if, in fact, it is not a dependent claim.

EDWARD J. BRENNER,
Apr. 12, 1966. *Commissioner of Patents.*

[825 O.G. 1183]

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(52) DEPOSIT ACCOUNTS

The practice instituted on May 1, 1966, pursuant to the notice of February 23, 1966 (824 O.G. 1200), whereby statutory fees may be charged against deposit accounts, and such accounts are closed if overdrawn, has resulted in certain difficulties for the Patent Office and deposit account holders. It has been decided therefore to modify that practice as indicated below.

As was pointed out in that notice, the charging of a fee against an overdrawn account cannot be considered as payment of the fee until a proper balance is restored or payment is made in some other way. Accordingly, deposit account holders who charge such fees must assume the risk of losing vital dates if they do not maintain a proper balance in their accounts at all times.

Apart from this, however, the overdrawing of an account places a burden on the Patent Office, particularly where a number of items are charged after the overdraft occurs, and it is appropriate that those who are responsible for causing such a condition should bear the cost of correcting it. In view of this fact, and of the hardship frequently caused if an account is permanently closed, the practice of closing deposit accounts merely because they are overdrawn will be discontinued, effective August 1, 1966. In lieu thereof an overdrawn account will be immediately suspended and no charges will be accepted against it until a proper balance is restored, together with a payment of ten dollars to cover the work done by the Patent Office incident to suspending and reinstating the account and dealing with charges which may have been made in the meantime. It is expected, however, that reasonable precautions will be taken in all cases to avoid overdrafts, and if an account is suspended repeatedly it will be necessary to close it.

Similarly, because of the burden placed on the Patent Office incident to the operation of deposit accounts, a charge of ten dollars will be made for opening each new account.

EDWARD J. BRENNER,
June 23, 1966. *Commissioner.*

[828 O.G. 377]

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(59) WITHDRAWAL OF ATTORNEY

Attorneys and agents are reminded that by notice published April 18, 1967, in 837 O.G. 667, requests for permission to withdraw as attorney or agent of record, pursuant to Rule 36, should be submitted in triplicate (original and two copies) and should indicate thereon the attorney or agent's present mailing address. The Group No. should also appear on all such requests.

JOSEPH F. NAKAMURA,
Sept. 27, 1973. *Acting Solicitor.*

[915 O.G. 1164]

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(187) EMERGENCY SITUATION IN THE U.S. POSTAL SERVICE

In view of the present emergency situation in U.S. postal service, the U.S. Patent Office is taking the following actions.

In regard to pending applications, the time for taking any action or paying any fee expiring during the period beginning March 16, and ending April 15, 1970, both dates inclusive, is hereby extended for ONE MONTH. However, no extension shall exceed a maximum period for response provided for in the Statutes.

U.S. Department of Commerce Field Offices have been designated, on an emergency basis, as receiving stations for the U.S. Patent Office. All papers should be enclosed in a sealed envelope and deposited in a Field Office. Such papers will be considered as received in the U.S. Patent Office on the day of deposit. The Field Office will date stamp each envelope so deposited, and applicants or their representatives should assure the legibility of the date stamp. Field Offices will place a corresponding date stamp on receipt cards provided by the depositor, which must completely identify the papers deposited.

Field Office deposits should, if possible, be limited to such papers wherein the Patent Statutes do not provide a remedy for failure to obtain a particular date. Examples of these types of papers are: checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, etc.

The Field Office in New York designated to receive papers for the U.S. Patent Office is located at:

41st Floor, Federal Office Bldg.
26 Federal Plaza, Foley Square
New York, N.Y.

The designated Field Office in Hartford, Connecticut is located at:

Room 610–B Federal Office Bldg.
450 Main St.
Hartford, Conn.

The addresses of Field Offices in other cities are listed in local directories and are available upon inquiry to the Commissioner of Patents.

RICHARD A. WAHL,
Mar. 19, 1970. *Acting Commissioner of Patents.*

[872 O.G. 1383]

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(188) PATENT OFFICE—POSTAL SERVICE

In view of the return to normal operations of the United States postal service, the Notice of Mar. 19, 1970 (published in the OFFICIAL GAZETTE of Mar. 24, 1970, vol. 872, No. 4) is hereby revised.

After Apr. 15, 1970, the U.S. Department of Commerce Field Offices will no longer be designated as receiving stations for the U.S. Patent Office. Accordingly, after the abovenoted date, all letters or other papers relating to patent and trademark cases will be considered as received in the U.S. Patent Office only if they are filed in accordance with Rule 6 of the Rules of Practice in Patent Cases as amended Nov. 26, 1969.

All other provisions of the Notice of Mar. 19, 1970 and the Notice of Mar. 26, 1970, relating to Trademarks, remain in effect.

WILLIAM E. SCHUYLER, JR.
Mar. 27, 1970. *Commissioner of Patents.*

[873 O.G. 319]

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(189) FILE HISTORY OF APPLICATIONS AFFECTED BY POSTAL EMERGENCY

As a result of the postal emergency, the time for taking any action or paying any fee in the U.S. Patent Office expiring between the dates of March 16, 1970 and April 15, 1970, both dates inclusive, was automatically extended for one month, provided it did not exceed a maximum period for response provided in the Statutes. (See O.G. of March 24, 1970 or March 31, 1970, 872 O.G. 1383 and April 7, 1970, 873 O.G. TM 2.)

Since this extension of time was automatic there will be nothing in the individual files to indicate that a paper filed

during that period was, in fact, timely though it was received later than its apparent due date.

In order to provide a complete history in the affected files and to dispel any question as to abandonment in the record of a patented file, applicants or their attorneys are requested to file a paper explaining these circumstances. A separate paper should be filed in each case so affected (identified by Serial No., filing date, title and applicant's name) and may be merely a copy of the notice which authorized the one-month extension or should specifically refer to and identify that notice.

RICHARD A. WAHL,
Apr. 27, 1970. *Assistant Commissioner of Patents.*

[874 O.G. 688]

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(190) U.S. DEPARTMENT OF COMMERCE FIELD OFFICES TO SERVE AS RECEIVING STATIONS ONLY IN DECLARED EMERGENCIES

During the recent postal emergency, Field Offices of the U.S. Department of Commerce were designated as receiving stations for the U.S. Patent Office (according to the Notices of March 19, 1970, 872 O.G. 1383 and March 26, 1970, 873 O.G. TM 2). In view of the subsequent resumption of normal postal operations, that emergency arrangement was discontinued in accordance with the notice of March 27, 1970, 873 O.G. 319. After April 15, 1970, the normal practice with respect to the filing of all letters and other papers relating to patent and trademark matters in the U.S. Patent Office was resumed.

The Patent Office has received suggestions proposing that the Field Offices continue to serve as receiving stations for the U.S. Patent Office. These suggestions have received careful and sympathetic consideration. However, it has been concluded that any activities of the Field Offices in this connection must be restricted, in the future, to any emergency officially announced by the Patent Office as requiring such action.

RICHARD A. WAHL,
Apr. 27, 1970. *Acting Commissioner of Patents.*

[874 O.G. 688]

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(191) PATENTS AND TRADEMARKS

Relief in Cases Affected by the Postal Emergency of March 1970

On June 30, 1971, President Nixon signed into law Public Law 92–34.

Public Law 92–34 requires claims for the benefit of an earlier filing date (Section 1.) and requests for such other relief as may be appropriate (Sec. 2.) to be filed in the Patent Office within 6 months after enactment, that is by December 30, 1971. Failure to file a statement within the noted period will result in loss of right to take advantage of the benefits of the law. Further explanation or evidence may be required at a subsequent time. Public Law 92–34 provides relief only for situations caused by the postal emergency which began on March 18, 1970, and ended on or about March 30, 1970, and for which there is no remedy under existing law.

The following explanation is designed to serve as a guide for persons desiring relief under the law.

The verified statement required to be filed under sections 1 and 2 of the law may be by any of the following:

(a) Applicant(s) for patent or trademark registration;
(b) Patentee(s) or trademark registrant;
(c) Owner(s) of record.

In cases involving plural inventors, statements made under (a) or (b) must be signed by all inventors.

The verified statement must specify the particular earlier date of receipt in the Patent Office to which the applicant, patentee or trademark registrant, or owner of record believes his application, fee or other paper would be entitled except for the delay caused by the postal emergency of March, 1970. The statement must be verified, that is, in the form of an oath or declaration. (37 CFR 1.68 (Patent Rule 68) and 2.20 (Trademark Rule 2.20).)

Evidence will not normally be required or considered by the Patent Office regarding a claimed filing date of March 18, 1970, or later, in applications actually filed before June 1, 1970. Claims for earlier filing dates in cases actually filed after June 1, 1970, or claiming a date prior to March 18, 1970, will be considered prima facie unreasonable unless an acceptable explanation of the basis for the claim is filed in the Patent Office with the claim or within 1 month or such longer time as may be prescribed by the Commissioner. Any claim not accepted by the Patent Office because it is obviously defective on its face or unreasonable may be subjected to further review by petition to the Commissioner.

The statement should adequately identify the involved application, patent, or trademark registration by including the name of the applicant, patentee or registrant, title of the invention or an identification of the mark, serial number, filing date, group art unit number and any other identifying data such as status of the case (e.g., awaiting first action, amendment, brief, etc.). Acceptable statements will be acknowledged, made of record and retained in the Patent Office files.

When practical, earlier filing dates accorded under this law, as well as the originally granted filing dates, will be identified on ensuing patents and trademark registrations. These dates will also be included in the OFFICIAL GAZETTE in connection with patents, trademark registrations and trademarks published for opposition. In other cases, such as applications in issue prior to filing of a claim, the patent or trademark registration number and claimed filing dates will be published in the OFFICIAL GAZETTE after December 30, 1971.

Patents issued with earlier filing dates afforded by this law will not be effective as prior art as of such earlier filing dates under subsection 102(e) of title 35 of the United States Code.

In a pending patent application in which a claim for an earlier filing date has been acknowledged under this law, applicants need not file a Rule 131 affidavit to overcome a reference having an effective filing date between the "earlier" and the actual filing date of the application. Intervening references of this type will be cited but not applied by the examiner. Although a statement claiming an earlier date is accepted by the Patent Office, the claimed earlier date may be called into question in subsequent inter partes proceeding in the Patent Office or in the courts. In these proceedings, the applicant or owner may be required to present further evidence establishing the filing date to which the application is entitled. In such cases a definite determination shall be made as to whether the applicant is entitled to the earlier date under the law.

In cases where a patent application or an application for registration or late renewal of a trademark is determined to have become abandoned for failure to meet a statutory time limit because of the postal emergency, the application will automatically be restored to pending status by the acceptance of the request, and prosecution or other processing of the application will be resumed. Similarly, if a trademark registration is determined to have been cancelled for failure to meet the statutory time limit within which to file the affidavit required under section 8 of the Trademark Act (15 U.S.C. 1058a) because of the said emergency, the order for cancellation will be rescinded.

As explained in the notice of January 26, 1971 (882 O.G. 1342), applicants who may be entitled to earlier filing dates should note that a change in their U.S. filing date might, in turn, alter the date of expiration of the 6- and 12-month periods for filing applications abroad under provisions of the Paris Convention for the Protection of Industrial Property.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Dated: July 14, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71–10469; Filed 7–22–71; 8:52 a.m.]

36 F.R. 13694; July 23, 1971

[889 O.G. 1064]

(210) PUBLIC LAW 92-132

[92nd Congress, S. 1253]

October 5, 1971

AN ACT

85 Stat. 364

To amend section 6 of title 35, United States Code, "Patents," to authorize domestic and international studies and programs relating to patents and trademarks.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 6 of title 35, United States Code, is amended to read as follows:

Patents, trademarks. International programs, U.S. participation. 66 Stat. 793.

"§ 6. *Duties of Commissioner*

"(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies and programs regarding domestic and international patent and trademark law; and shall have charge of property belonging to the Patent Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent Office.

"(b) The Commissioner, under the direction of the Secretary of Commerce, may, in coordination with the Department of State, carry on programs and studies cooperatively with foreign patent offices and international intergovernmental organizations, or may authorize such programs and studies to be carried on, in connection with the performance of duties stated in subsection (a) of this section.

Transfer of funds.

"(c) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, transfer funds appropriated to the Patent Office, not to exceed $100,000 in any year, to the Department of State for the purpose of making special payments to international intergovernmental organizations for studies and programs for advancing international cooperation concerning patents, trademarks, and related matters. These special payments may be in addition to any other payments or contributions to the international organization and shall not be subject to any limitations imposed by law on the amounts of such other payments or contributions by the Government of the United States."

Approved October 5, 1971.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 92-475 (Comm. on the Judiciary).
SENATE REPORT No. 92-71 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 117 (1971):
Apr. 22, considered and passed Senate.
Sept. 28, considered and passed House.

[892 O.G. 1600]

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(214) LEGAL JOURNALS

[37 CFR Parts 1, 2]

Withdrawal of Proposed Rule Making Regarding Placing of Announcements

Under date of May 11, 1972, 37 FR 9488 (FR Doc. 72-7160), notice of proposed rule making was given concerning a proposed revision of §§ 1.345(b) and 2.14(b) of Title 37 of the Code of Federal Regulations. The purpose of the proposed revision was to permit persons practicing before the Patent Office to place in legal journals announcements of their availability to act as consultants to or as associates of other lawyers in patent or trademark practice. After careful consideration of all of the comments received on the proposed revision, it has been determined that the proposed revision will not be made at this time and, accordingly, the notice of proposed rule making is canceled and withdrawn.

Dated: Jan. 29, 1973.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved: Jan. 29, 1973.

RICHARD O. SIMPSON,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 73-3097; Filed 2-15-73; 8:45 am]

Published in 38 F.R. 32; Feb. 16, 1973

[908 O.G. 784]

(219) CHANGE IN LEGAL HOLIDAYS

Those doing business before the Patent Office are hereby reminded that by Public Law 90—363, 82 Stat. 250, effective January 1, 1971, Section 6103(a) of Title 5, United States Code, was amended to read as follows:

§ 6103. *Holidays*

(a) The following are legal public holidays:
New Year's Day, January 1.
Washington's Birthday, the third Monday in February.
Memorial Day, the last Monday in May.
Independence Day, July 4.
Labor Day, the first Monday in September.
Columbus Day, the second Monday in October.
Veterans Day, the fourth Monday in October.
Thanksgiving Day, the fourth Thursday in November.
Christmas Day, December 25.

Each of the holidays enumerated will constitute "a holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Dec. 2, 1970.

[881 O.G. 1707]

EDITORIAL NOTE: Sec. 6103(c) states that January 20 of each fourth year after 1965, Inauguration Day, is also a legal public holiday.

(205) TERMINATION OF THE "RULES OF PRACTICE IN PATENT CASES" BOOKLET

The Superintendent of Documents has informed the Patent Office that the basic rule book entitled "Rules of Practice in Patent Cases" is out of print and no longer available. Furthermore, Revision 3, dated July 1973, is the last revision covered by the current subscriptions. A booklet entitled "37 Code of Federal Regulations," published by the Office of the Federal Register, contains all patent rules and forms, as well as trademark rules and forms and copyright rules. Inasmuch as this publication is revised annually and is more economical to both the public and the Patent Office even if repurchased annually, the Patent Rules of Practice booklet will not be reprinted, thereby terminating this duplication of printing. Consequently, it is suggested that persons desiring a copy of the patent rules order a copy of "37 Code of Federal Regulations" from the Superintendent of Documents. The price for the most recent issue, dated July 1, 1973, is $1.75.

The Patent Office will supply all patent examiners and other appropriate employees with a copy of "37 Code of Federal Regulations" annually beginning with the July 1974 edition.

Since the inventory of the Trademark Rules of Practice booklet is in large supply, it will continue to be offered for sale by subscription from the Superintendent of Documents and updatings will continue to be published periodically.

C. MARSHALL DANN,
Mar. 18, 1974. *Commissioner of Patents.*

[921 O.G. 860]

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(206) AVAILABILITY OF RULES OF PRACTICE

A new edition of "37 Code of Federal Regulations," revised to July 1, 1974 is now available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 for $1.75. The catalog number is GS 4.108: 37/9-74.

This booklet is published by the Office of the Federal Register and contains all patent rules and forms, trademark rules and forms as well as the copyright rules.

The looseleaf booklet entitled "Rules of Practice in Patent Cases" is no longer available. However, the looseleaf "Trademark Rules of Practice" booklet is still available for $3.50 ($1 additional for foreign mailing).

RENE D. TEGTMEYER,
Aug. 20, 1974. *Acting Commissioner of Patents.*

[926 O.G. 732]

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(220) OFFICE OF THE SECRETARY

[Dept. Organization Order 30-3A]

PATENT OFFICE

Organization and Functions

This order effective December 15, 1972, supersedes the material appearing at 27 FR 11469 of November 21, 1962.

SECTION 1. *Purpose.* This order delegates authority to the Commissioner of Patents and prescribes the functions of the Patent Office.

SEC. 2. *Status and line of authority.* .01 The Patent Office is hereby continued as a primary operating unit of the Department of Commerce. First established as an independent bureau under the direction of a Commissioner of Patents by the general revision of patent laws enacted by Congress July 4, 1836 (5 Stat. 117), it became a bureau of the Department of Commerce by Executive Order of April 1, 1925, in accordance with the authority contained in the act of February 14, 1903 (32 Stat. 830). When the patent laws were codified as Title 35, United States Code, effective January 1, 1953, the Patent Office was continued as an office in the Department of Commerce.

.02 The Commissioner of Patents (hereinafter called the Commissioner), who is appointed by the President by and with the advice and consent of the Senate shall be the head of the Patent Office. He shall be principally assisted by a Deputy Commissioner and four assistant commissioners, whose titles and status are specified below. The First Assistant Commissioner (Deputy Commissioner) and the first two assistant commissioners are provided for by 35 U.S.C. 3 and are appointed by the President by and with the advice and consent of the Senate.

a. The Deputy Commissioner (First Assistant Commissioner under 35 U.S.C. 3).

b. The Assistant Commissioner for Patents (an assistant commissioner under 35 U.S.C. 3).

c. The Assistant Commissioner for Trademarks (an assistant commissioner under 35 U.S.C. 3).

d. The Assistant Commissioner for Legal Affairs.

e. The Assistant Commissioner for Administration.

.03 The Deputy Commissioner or, in the event of a vacancy in that office, the assistant commissioner appointed under 35 U.S.C. 3 who is senior in date of appointment, shall act as Commissioner during a vacancy in that office until a Commissioner is appointed and takes office. In the absence of the Commissioner, the Deputy Commissioner shall act as Commissioner. If the Deputy Commissioner is likewise absent or that office is vacant, one of the assistant Commissioners appointed under 35 U.S.C. 3 or the Assistant Commissioner for Legal Affairs or the Solicitor of the Patent Office shall act as Commissioner in an order of precedence prescribed by the Commissioner.

.04 The Commissioner shall report and be responsible to the Assistant Secretary for Science and Technology.

SEC. 3. *Delegation of authority.* .01 Pursuant to the authority vested in the Secretary of Commerce by 35 U.S.C. 3 and Reorganization Plan No. 5 of 1950, the functions of the Patent Office and its officers specified in Title 35 of the United States Code, as amended, are hereby vested in the Secretary of Commerce and redelegated to the Commissioner of Patents.

.02 Pursuant to the authority vested in the Secretary of Commerce by law, the Commissioner of Patents is hereby delegated authority to perform the following functions vested in the Secretary of Commerce.

a. The functions in Title 15, Chapter 22 of the United States Code, which pertain to trademarks.

b. The functions in Executive Order 10096 of January 23, 1950, and the Executive Order 10930 of March 24, 1961, which pertain to inventions made by Government employees.

c. The functions in 42 U.S.C. 2181 and 2182, which pertain to inventions relating to atomic weapons, and in 42 U.S.C. 2457, which pertain to property rights in inventions made in performance of work under contract for the National Aeronautics and Space Administration.

d. Such functions under other authorities of the Secretary of Commerce as are applicable to performing the functions assigned in this order.

.03 Exercise of the functions delegated in paragraphs .01 and .02 of this section shall be subject to such policies or directions as may be prescribed by the Secretary of Commerce or the Assistant Secretary for Science and Technology.

.04 The Commissioner of Patents may, except as precluded by law or regulation, redelegate his authority to employees of the Patent Office subject to such conditions in the exercise of the delegated authority as he may prescribe.

SEC. 4. *Functions.* The Patent Office shall perform the following functions:

.01 Examine applications for patent to determine if they meet the requirements of law for the issuance of patents and, upon such determination, granting patents.

.02 Administer special laws and regulations as to secrecy of certain inventions, licenses for foreign filing, and those relating to atomic energy and space technology.

.03 Decide the ownership of patents and the rights to inventions made by Government employees, as provided by Executive Orders 10096 and 10930.

.04 Provide for the publication, storage, dissemination, and exchange of patents and related documentation.

.05 Maintain systems and facilites providing appropriate access to United States and foreign patents and other technical literature for use of the examiners and the public.

.06 Examine applications for the registration of trademarks to determine their entitlement to registration under the law; give public notice of trademarks allowed for registration and publish registered trademarks; maintain the principal and supplemental registers of trademark registrations, and provide for public access to such registers and related trademark records.

.07 Issue patents and certificates of trademark registration.

.08 Reissue defective patents and issue certificates of correction of patents and trademark registrations.

.09 Maintain records as to proprietary interests in patents and trademarks and applications therefor.

.10 Carry on or authorize studies and programs, separately or in coordination with other United States, foreign and international agencies, regarding domestic and international patent and trademark law.

.11 Perform other functions required, or which the Commissioner deems necessary and proper, in exercising the authority delegated herein.

Effective date: December 15, 1972.

GUY W. CHAMBERLIN, JR.,
Acting Assistant Secretary for Administration.

[FR Doc. 73-320; Filed 1-5-73; 8:45 am]

[Dept. Organization Order 30-3B]

PATENT OFFICE

Organization and Functions

This order effective December 15, 1972, supersedes the material appearing at 36 FR 9078 of May 19, 1971.

SECTION 1. *Purpose.* This order prescribes the organization and assignment of functions within the Patent Office. Department Organization Order 30-3A prescribes the scope of authority and functions.

SEC. 2. *Organization structure.* The principal organization structure and line of authority of the Patent Office shall be as depicted in the attached organization chart. A copy of the organization chart is attached to the original document on file in the Office of the Federal Register.

SEC. 3. *Office of the Commissioner.* The Commissioner determines the policies and directs the programs of the Patent Office and is responsible for the conduct of all activities of the Patent Office. He is principally assisted by Deputy Commissioner and four Assistant Commissioners who shall have the main duties as specified below:

a. The Deputy Commissioner (First Assistant Commissioner under 35 U.S.C. 3) shall assist the Commissioner in the direction of the Patent Office with immediate responsibility for the Office of Petitions and shall perform the duties of the Commissioner in the latter's absence.

b. The Assistant Commissioner for Patents (an assistant commissioner under 35 U.S.C. 3) shall provide administrative and policy direction for the patent examining and related operations which consist of the organizational elements enumerated in section 5 of this order. He is assisted by a Deputy Assistant Commissioner who shall, among other duties, have immediate responsibility for the patent examining groups and shall perform the duties of the Assistant Commissioner during the latter's absence.

c. The Assistant Commissioner for Trademarks (an assistant commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the trademark registration and related operations which consist of the organizational elements enumerated in section 6 of this order.

d. The Assistant Commissioner for Legal Affairs shall be the chief law officer of the Patent Office and as applicable shall provide administrative and policy direction to the organizational elements enumerated in section 7 of this order. Pursuant to Department Organization Order 10-6, he shall be subject to the overall authority of the Department's General Counsel with respect to legal and legislative matters involving the Patent Office, other than in connection with the issuance of patents or the registration of trademarks.

e. The Assistant Commissioner for Administration shall be the principal advisor to the Commissioner on the formulation and application of management policies and shall provide administrative, management, and operational support services to components of the Patent Office. In addition, he shall provide administrative and policy direction to a staff assigned to his office as well as to the organizational elements enumerated in section 8 of this order. He shall be assisted by a Deputy Assistant Commissioner who shall perform the duties of the Assistant Commissioner during the latter's absence.

SEC. 4. *Office reporting to the Commissioner.* .01 The Offices of Petitions shall receive, docket, maintain records, and take other appropriate action with respect to petitions to the Commissioner submitted under applicable law and regulations; assign petitions to appropriate officials for decision or recommend and prepare decisions for review and approval by the Deputy Commissioner; and recommend changes in office policy, practices, and procedures, where the need for such appears evident from the records of the office.

.02 The Office of Government Inventions and Patents shall administer Executive Order 10096, as amended by Executive Order 10930 and related regulations, including the rendering of final decisions on the ownership of patents and the rights to inventions made by Government employees, and advise the Commissioner on matters involving the Committee on Government Patent Policy (of the Federal Council for Science and Technology). It shall also conduct research, liaison, and coordinate functions needed to carry out Executive Order 10096 and to advise the Commissioner on Committee matters; provided executive secretariat support to the Committee; and assist in the development and formulation, to the extent appropriate, of a uniform Government-wide policy.

.03 The Office of Advanced Systems Development shall apply analytical basic research techniques to the development of new machine-assisted experimental search, retrieval, and display systems; to the exploration and application of advanced technology for the betterment of operating systems; and to increasing the effectiveness of technical information dissemination and accessing measures. This work is directed primarily to providing solutions to hitherto unresolved problems and to the development of experimental or test applications, for simulations of original techniques or operations. It shall assist in the installation, pilot use, and evaluation of experimental systems in operating environments.

.04 The Office of Information Services shall advise and represent the Commissioner on information matters; conduct programs fostering public understanding of the American patent system and the functions, services and administrative publications of the Patent Office; develop publication policies; provide direction and assistance in developing new and revised publications; and assure conformity with policies, regulations, and standards concerning publications and publication practices.

SEC. 5. *Offices reporting to the Assistant Commissioner for Patents.* .01 The Office of Patent Program Control shall develop procedures for and establish quality, quantity, and other performance standards relating to the conduct of the patent examination and classification functions; establish program activity targets and continually evaluate status against program objectives; provide training to examiners in patent practices and procedures; and monitor compliance with examination and classification standards and procedures.

.02 The Office of Patent Classification shall develop, implement, and maintain subject matter classification systems for patent search files of prior art; evaluate and adapt experimental or other search systems developed elsewhere; determine requirements for and initiate procurement of foreign patent and literature abstracting services for use by examiners; and provide technical specifications, guidance, advice, and assistance to the contracting officer in such procurements; coordinate the classification of U.S. and foreign patent documents and nonpatent literature; and participate in developing and fostering harmonization of the United States and the International Patent Classification systems.

.03. The Examining Groups shall examine applications for patents to ascertain if the applicants are entitled to patents under the law and grant patents to those so entitled. Each examining group shall perform this function for patent applications falling within the generic category assigned to it. The number of examining groups and the coverage of the generic categories shall be determined by the Commissioner.

SEC. 6. *Offices reporting to the Assistant Commissioner for Trademarks.* .01 The Office of Trademark Program Control shall develop guidelines governing trademark examining procedures; establish program activity targets and continually evaluate status against program objectives; and provide instruction in trademark practice and procedures and coordinate trademarks administrative support activities.

.02 The Trademark Trial and Appeal Board shall be responsible for hearing and deciding adversary proceedings involving interfering applications, oppositions to registration, cancellations, and concurrent use proceedings; and for hearing and deciding appeals from final refusals of the trademark examiners to allow the registration of trademarks.

.03 The Trademark Examining Operation shall be responsible for the classification of trademark applications into classes of goods and services, the examination and processing of these applications, and the registration of trademarks, service marks, and certification marks; and maintain the principal and supplemental registers of trademarks.

SEC. 7. *Offices reporting to the Assistant Commissioner for Legal Affairs.* .01 The Office of the Solicitor shall handle all litigation to which the Commissioner is a party and provide other legal services, including advice and assistance on legislative matters, and maintenance of the law library.

.02 The Examiners-in-chief sitting as a Board of Patent Appeals shall be responsible for hearing and deciding appeals from adverse decisions of examiners upon applications for patents.

.03 The Board of Patent Interferences shall conduct patent interference proceedings and make final determinations in the Patent Office as to priority of invention. The Board shall also hear and decide questions concerning property rights in inventions in the atomic energy and space fields brought before it under the provisions of sections 2182 and 2456 (d) and (e) of title 42, U.S.C.

.04 The Office of Legislation shall develop recommendations and advise policy and action concerning matters which may require changes in the patent and trademark laws; review and prepare analysis of bills or drafts of legislation concerning patent or trademark matters received for technical appraisal; prepare legislative proposals and, after appropriate clearance, draft legislation and supporting documentation for clearance with the Department's Office of the General Counsel and the Office of Management and Budget, for consideration by the Congress; and maintain liaison with patent and trademark bar associations, industry, and others concerned with proposed and pending legislation.

.05 The Office of International Affairs shall coordinate the development of policy and program recommendations or positions respecting international patent and trademark affairs, including all proposed new or modified agreements under the Paris Union, Patent Cooperation Treaty, or like treaties; maintain liaison in such matters with the Office of the Secretary, the Department of State, and concerned elements of the public; and participate in negotiating patent and trademark matters in establishing international agreements and in the implementation of programs affecting Patent Office commitments or responsibilities in these areas.

SEC. 8. *Offices reporting to the Assistant Commissioner for Administration.* .01. Management Planning Organizations:

a. The Office of Budget shall formulate, interpret, and execute budgetary and fiscal policies; establish and maintain a comprehensive budget program collaborating with cost center officials in developing budget and fiscal plans; develop and present budget requests; allocate and maintain budgetary accountability of available funds; maintain external liaison in budgetary matters; and review and evaluate the fulfillment of budget-based program commitments.

b. The Office of Management and Organization shall plan and conduct studies designed to improve organization, methods, procedures, workflow, work measurement, managerial technicals, and resource utilization, or otherwise increase efficiency, effectiveness and economy of operations; develop and manage a system for the issuance of internal administrative orders and instructions; promote development of the Patent Office management improvement program and coordinate the collection, review and submission of reportable plans and accomplishments thereon; coordinate a program for the management and control of external reports; and make special studies as required.

c. The Office of Program Planning and Evaluation shall formulate plans for and coordinate the development of Patent Office-wide long and short range program objectives within the framework of budgetary constraints; define, project, and allocate the manpower and other resources required to achieve Patent Office-wide objectives; develop and monitor a management information system which prescribe code structures for and consolidates all administrative management systems into a single integrated data base to provide information designed to measure performance and achievement against planned objectives; and develop and issue a wide variety of timely internal analytical and interpretive reports to the managers of the Patent Office.

.02 Public service organizations:

a. The Office of Publications shall schedule and manage the processing and movement of allowed patent application files in procuring the creation of full patent text machine language data base and the composition and printing of weekly patent issues and related announcements in the OFFICIAL GAZETTE; provide requisition and scheduling services for trademark publications; monitor the quality or performance by contributing sources and maintain close liaison with U.S. Government Printing Office; and prepare and issue patent grants and periodic publications of patent indexes.

b. The Office of Patent and Trademark Services shall provide the materials and services offered directly to the public, many of which are provided on a fee basis. These shall include recording instruments that transfer property rights to patents and trademarks; furnishing copies of patents, trademark registrations, and office records to examiners, and others in the Office, as well as to the public; providing drafting services; and maintaining appropriate collections of pertinent technical and scientific information such as United States and foreign patents, periodicals, books, and other publications for use by the public. It shall also conduct an initial examination of patent applications for compliance with law and regulation as to form and certain matters of factual content; grant or deny a filing date based on such examination and forward to the Examining Groups those granted a filing date; acknowledge the acceptance or rejection of applications for examination; originate documentation of pending applications; initially assign accepted applications to units of the examining groups for examination; and maintain records on the status and location of all applications.

.03 Administrative service organizations:

a. The Office of Computer Services shall be responsible for providing data processing services to other elements of the Patent Office: This shall include the conduct of systems analysis and equipment evaluation studies directly related to the design and development of systems and programs for applications of computer techniques; preparation or procurement and testing of computer programs, and supplemental data processing services; operation of all general purpose ADP equipment including that which may be approved for use within another organization unit as an integral part of its operations; and maintenance of a comprehensive library of programs, including those developed or procured by other organization units.

b. The Office of Finance shall develop and maintain the financial accounting system of the Patent Office, perform accounting operations for the revenue, trust funds, and appropriation of the Patent Office, including maintenance of general accounts and related fiscal records, preparation of financial statements and reports, audit and certification of vouchers for payment, issuance of deposit account statements, initiation of action to collect amounts due the Patent Office, and administration of the payroll system and related employee accounts; and provide financial advice and opinions.

c. The Office of General Services shall plan and administer a broad Office-wide program of general services, including procurement control; property, space, and facilities management; communications, records, files, mail, and forms management; administrative printing; and clearance of all requirements involving contractual procurements, including liaison with the Department, in connection therewith.

d. The Office of Personnel shall administer activities relating to recruitment, placement, employee relations, equal employment opportunity programs for employees, training and career development, incentive awards, performance rating, position classification and wage administration, group-management relations, and various employee benefit programs.

.04 The Office of Technology Assessment and Forecast shall continually assess the status of technological activities in all countries; compare inventive activity in the United States relative to other nations; and forecast developments on a world-wide basis.

Effective date: December 15, 1972.

GUY W. CHAMBERLIN, JR.,
Acting Assistant Secretary for Administration.

[FR Doc. 73-321; Filed 1-5-73; 8:45 am]

Published in 38 F.R. 1068, Jan. 8, 1973

[907 O.G. 2]

(221) PATENT OFFICE

Organization and Functions

This order, effective August 1, 1973, amends the material appearing at 38 FR 1068 of January 8, 1973.

Department Organization Order 30–3B, dated December 15, 1972 is hereby amended as follows:

1. SEC. 7. *Offices reporting to the assistant commissioner for legal affairs.*

a. Paragraph .04 is amended to read:

.04 The *Office of Legislation and International Affairs* shall make studies and advise the Commissioner on policy and action concerning matters which may require legislation and on international patent and trademark matters; develop and direct the implementation of related programs; maintain liaison with the Office of the Secretary, the Department of State, and appropriate congressional committees; and conduct negotiations in technical patent and trademark matters in establishing or implementing international agreements.

b. Paragraph .05 is deleted.

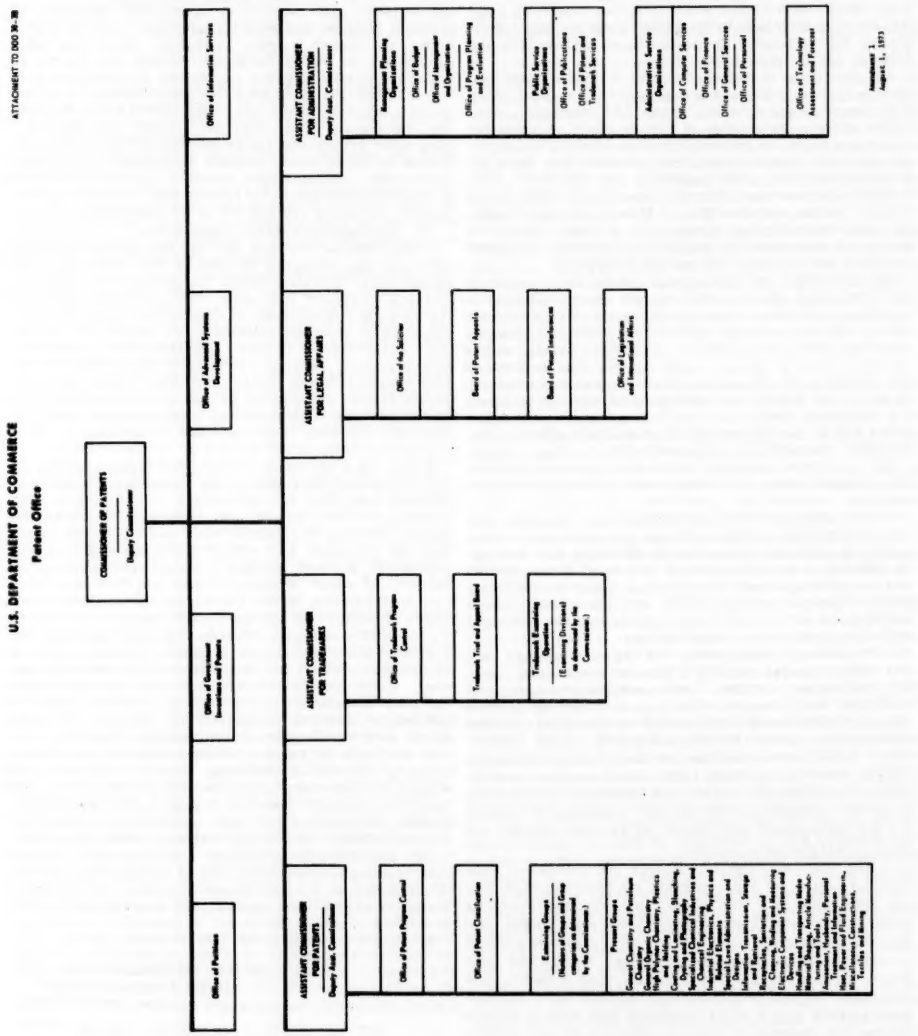
2. The organization chart of December 15, 1972 is superseded by the organization chart attached to this amendment. Copy of the Organization Chart is attached to the original of this document on file in the Office of the Federal Register.

Effective date: August 1, 1973.

HENRY B. TURNER,
Assistant Secretary for Administration.

[FR Doc. 73–19292; Filed 9–11–73; 8:45 am]

[915 O.G. 378]


ATTACHMENT TO DOO 30-3B
U.S. DEPARTMENT OF COMMERCE
Patent Office
COMMISSIONER OF PATENTS
Deputy Commissioner
Office of Information Services
Office of Advanced Systems Development
Office of Government Inventions and Patents
Office of Petitions
ASSISTANT COMMISSIONER FOR ADMINISTRATION
Deputy Asst. Commissioner
Assignment Planning Organization
Office of Budget
Office of Management and Organization
Office of Program Planning and Evaluation
Public Service Organization
Office of Publications
Office of Patent and Trademark Services
Administrative Service Organization
Office of Computer Services
Office of Finance
Office of General Services
Office of Personnel
Office of Technology Assessment and Forecast
ASSISTANT COMMISSIONER FOR LEGAL AFFAIRS
Office of the Solicitor
Board of Patent Appeals
Board of Patent Interferences
Office of Legislation and International Affairs
ASSISTANT COMMISSIONER FOR TRADEMARKS
Office of Trademark Progam Control
Trademark Trial and Appeal Board
Trademark Examining Operation
(Examining Divisions as determined by the Commissioner)
ASSISTANT COMMISSIONER FOR PATENTS
Deputy Asst. Commissioner
Office of Patent Progam Control
Office of Patent Classification
Examining Groups
(Numbers of Groups and Group assignments as determined by the Commissioner)
Patent Groups
Amendment 1
August 1, 1973

PATENT OFFICE NOTICES

Publication of Applications Under Trial Voluntary Protest Program

The January 28, 1975 issue of the Official Gazette will include publication of information identifying the 665 applications in which secrecy was waived under the Trial Voluntary Protest Program announced by the Notice of May 7, 1974, published at 923 O.G. 2 on June 4, 1974. The identifying information will include matter similar to that used in the Official Gazette for patents and will also list the references cited by the Patent Office and the number of the examining group in which the application was examined.

From January 28, 1975 to April 28, 1975 the application files of the applications listed in the Official Gazette will be made available for public inspection upon written request in the examining group identified.

Applications in which secrecy has been waived under the Trial Voluntary Protest Program will be published in printed form, similar to that of printed patents. Printed copies will be available on and after January 28, 1975 at the prices set by statute for patent copies. Orders for copies of the published applications must include the "B" prefix before the Serial Number to differentiate them from orders for patents.

Orders for copies of the January 28, 1975 Official Gazette may be placed with the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The price is $6.60 per copy.

Any protests relating to the patentability of these published applications must be filed in writing in the Patent Office no later than April 28, 1975.

C. MARSHALL DANN,
Commissioner of Patents.

Dec. 2, 1974

Certificates of Correction for the Week of Jan. 7, 1975

P.P. 3,630	3,808,036	3,831,280	3,840,866
Re. 27,981	3,808,053	3,831,336	3,840,969
Re. 28,031	3,809,767	3,831,426	3,841,046
Re. 28,055	3,809,889	3,831,617	3,841,095
Re. 28,141	3,810,047	3,831,746	3,841,200
Re. 28,222	3,810,090	3,831,896	3,841,400
3,426,664	3,810,761	3,832,138	3,841,418
3,453,250	3,810,770	3,832,314	3,841,473
3,537,011	3,811,292	3,832,403	3,841,607
3,558,816	3,811,432	3,832,456	3,841,852
3,604,134	3,811,803	3,832,571	3,842,010
3,645,949	3,812,075	3,832,639	3,842,063
3,687,475	3,812,205	3,832,744	3,842,069
3,692,748	3,813,169	3,832,775	3,842,133
3,697,588	3,813,344	3,833,108	3,842,506
3,708,452	3,814,236	3,833,287	3,842,550
3,708,662	3,814,547	3,833,383	3,842,746
3,711,015	3,815,288	3,833,492	3,842,752
3,711,443	3,815,822	3,833,522	3,842,960
3,712,496	3,816,190	3,833,801	3,843,178
3,729,633	3,816,716	3,833,961	3,843,685
3,731,557	3,817,346	3,835,101	3,843,741
3,741,320	3,818,065	3,835,121	3,843,768
3,742,513	3,818,206	3,835,315	3,843,837
3,742,851	3,818,951	3,835,352	3,843,863
3,743,739	3,819,184	3,835,386	3,843,908
3,744,126	3,819,262	3,835,646	3,843,923
3,746,611	3,819,357	3,835,758	3,843,937
3,749,270	3,819,370	3,835,876	3,844,047
3,750,942	3,819,447	3,836,012	3,844,525
3,751,298	3,819,638	3,836,309	3,844,726
3,753,975	3,819,756	3,836,374	3,844,738
3,757,943	3,819,906	3,836,459	3,844,787
3,758,449	3,819,987	3,836,680	3,845,020
3,761,350	3,820,028	3,836,993	3,845,026
3,761,439	3,820,502	3,837,114	3,845,049
3,763,058	3,820,616	3,837,299	3,845,100
3,763,660	3,821,399	3,837,554	3,845,217
3,766,124	3,822,055	3,838,054	3,845,314
3,767,631	3,822,178	3,838,108	3,845,501
3,768,105	3,822,501	3,838,242	3,845,577
3,772,409	3,822,539	3,838,254	3,845,814
3,774,066	3,822,664	3,838,270	3,845,945
3,780,440	3,823,070	3,838,323	3,845,972
3,781,337	3,823,126	3,838,329	3,845,983
3,782,939	3,823,179	3,838,359	3,846,044
3,783,026	3,823,997	3,838,397	3,846,051
3,783,822	3,824,201	3,838,435	3,846,067
3,787,323	3,824,591	3,838,533	3,846,203
3,787,669	3,825,650	3,838,980	3,846,249
3,788,865	3,825,770	3,839,017	3,846,292
3,789,457	3,825,899	3,839,076	3,846,298
3,790,471	3,826,470	3,839,097	3,846,328
3,790,564	3,826,604	3,839,227	3,846,495
3,790,699	3,826,683	3,839,245	3,846,624
3,792,577	3,826,754	3,839,307	3,846,720
3,792,579	3,827,494	3,839,565	3,846,725
3,793,074	3,827,579	3,839,599	3,846,839
3,793,310	3,827,685	3,839,721	3,846,937
3,796,037	3,827,841	3,839,724	3,847,014
3,797,728	3,828,068	3,840,080	3,847,088
3,798,249	3,828,098	3,840,139	3,847,178
3,798,532	3,828,988	3,840,395	3,847,279
3,801,589	3,829,373	3,840,416	3,847,539
3,803,352	3,829,426	3,840,502	3,847,684
3,804,214	3,829,485	3,840,512	3,847,777
3,804,511	3,829,602	3,840,551	3,847,825
3,804,756	3,829,969	3,840,611	3,847,940
3,804,817	3,830,694	3,840,635	3,848,134
3,806,175	3,830,973	3,840,640	3,848,247
3,806,553	3,831,215	3,840,641	3,849,209
3,807,223	3,831,262	3,840,837	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patents are available from the Commissioner of Patents, Washington, D.C. 20231, at $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161, at the prices cited. Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent Office. Claims and other technical data can usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF ARMY

Chief, Patents Division, Pentagon, Washington, D.C. 20310

Patent 3,759,557. Locking Bars for High Security Padlocks. Filed May 25, 1971. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,759,712. Photographic Processing Method. Filed July 26, 1971. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,764,475. Enzymatic Hydrolysis of Cellulose to Soluble Sugars. Filed Dec. 22, 1971. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,947. High-Precision Variable Radio Frequency Coil. Filed Nov. 1, 1972. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,765,907. Blocking Microleaks in Flexible Food Packages. Filed July 22, 1971. Patented Oct. 16, 1973. Not available NTIS.

Patent 3,768,976. Temperature-Time Integrating Indicator. Filed May 20, 1971. Patented Oct. 30, 1973. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 450,520. Alloy Solution Hardening With Solute Pairs. Filed Mar. 12, 1974. PC $4.25/MF $2.25.

Patent application 456,391. Method for Detection of Trichinellae. Filed Mar. 29, 1974. PC $4/MF $2.25.

Patent application 456,995. Rapid Digestion Process for Determination of Trichinellae in Meat. Filed Apr. 1, 1974. PC $4/MF $2.25.

Patent application 459,756. Photochemical Stimulation of Nerves. Filed Apr. 10, 1974. PC $4/MF $2.25.

Patent application 464,428. Carbon Monoxide Oxidation Catalyst. Filed Apr. 26, 1974. PC $4/MF $2.25.

Patent 3,782,929. Fluxless Aluminum Brazing. Filed June 23, 1972. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,783,144. Process for Producing Fluoronitro Alcohol Compounds. Filed Oct. 16, 1970. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,784,674. Atmosphere Purification of Radon and Radon Daughter Elements. Filed Sept. 9, 1971. Patented Jan. 8, 1974. Not available NTIS.

Patent 3,785,370. Detection of Impaired Pulmonary Function. Filed Sept. 14, 1972. Patented Jan. 15, 1974. Not available NTIS.

Patent 3,785,803. Extraction of Mercury From Alkaline Brines. Filed Mar. 1, 1972. Patented Jan. 15, 1974. Not available NTIS.

Patent 3,786,672. Two-Dimensional Coils for Electro-Magnetic Generation and Detection of Acoustic Waves. Filed Sept. 20, 1972. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,321. Californium-Palladium Metal Neutron Source Material. Filed July 1, 1971. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,691. Source Holder Collimator for Encapsulating Radioactive Material and Collimating the Emanations From the Material. Filed Jan. 31, 1973. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,788,305. Intratracheal Sampling Device. Filed Oct. 19, 1972. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,788,482. Folded Membrane Dialyzer. Filed Mar. 10, 1972. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,788,814. Highly Enriched Multiply-Labeled Stable Isotopic Compounds as Atmospheric Tracers. Filed Feb. 1, 1972. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,790,492. Method for Production of Uniform Microspheres. Filed Mar. 11, 1974. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,791,524. Tissue Collector. Filed Apr. 13, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,791,820. Fluxless Aluminum Brazing. Filed June 23, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,136. Method for Preparing Hollow Metal Oxide Microsphere. Filed Nov. 2, 1971. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,794,715. Solvent Extraction Process for Producing Low-Nitrate and Large-Crystal-Size PuO_2 Sols. Filed Aug. 30, 1972. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,716. Separation of Uranium Isotopes by Chemical Exchange. Filed Sept. 13, 1972. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,795,580. Fuse for Nuclear Reactor. Filed Oct. 19, 1972. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,795,874. Apparatus for Pumping a High Pressure Laser System. Filed Nov. 3, 1972. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,798,161. Composition for Preparing Graphite Bodies. Filed Nov. 10, 1970. Patented Mar. 19, 1974. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch, Federal Bldg., Hyattsville, Md. 20782

Patent application 393,251. Collagen Dispersions. Filed Aug. 30, 1973. PC $4/MF $2.25.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, Washington, D.C. 20590

Patent application 502,832. Apparatus for Testing the Traction Properties of Pneumatic Tires. Filed Sept. 3, 1974. PC $4/MF $2.25.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Bethesda, Md. 20014

Patent application 479,582. Pleated Membrane Intrauterine Contraceptive Device. Filed June 14, 1974. PC $4/MF $2.25.

Patent 3,770,607. Glucose Determination Apparatus. Filed Nov. 6, 1973. Patented Oct. 15, 1971. Not available NTIS.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 7, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock: Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-29-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids, Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-19-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-14-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-19-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-10-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-10-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-14-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	4-15-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-13-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-19-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	3-4-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-14-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-15-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	5-17-74

Expiration of patents: The patents within the range of numbers indicated below expire during November 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,811,722 to 2,814,801, inclusive
Plant Patents ..... Numbers 1,656 to 1,660, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JANUARY 7, 1975

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T930,001

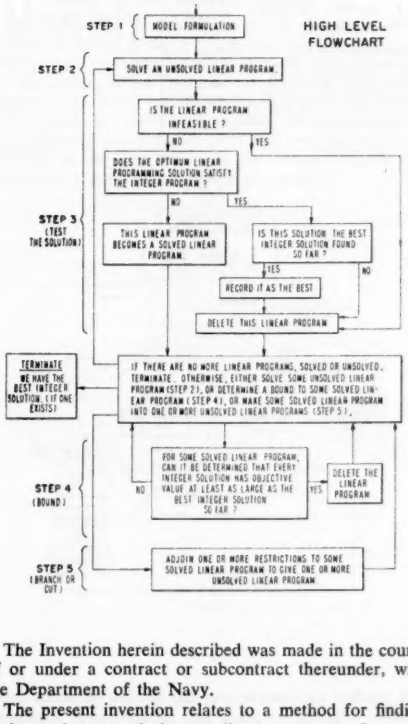
METHOD FOR FINDING OPTIMUM INTEGER-VALUED SOLUTION OF LINEAR PROGRAMS

Ralph E. Gomory, Chappaqua, and Ellis L. Johnson, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 158,462, June 30, 1971. This application May 29, 1973, Ser. No. 364,396

Int. Cl. G06f *15/34*
U.S. Cl. 444—1

7 Sheets Drawing. 108 Pages Specification


HIGH LEVEL FLOWCHART
STEP 1
MODEL FORMULATION
STEP 2
SOLVE AN UNSOLVED LINEAR PROGRAM.
IS THE LINEAR PROGRAM INFEASIBLE ?
NO
YES
DOES THE OPTIMUM LINEAR PROGRAMMING SOLUTION SATISFY THE INTEGER PROGRAM ?
NO
YES
STEP 3 (TEST THE SOLUTION)
THIS LINEAR PROGRAM BECOMES A SOLVED LINEAR PROGRAM.
IS THIS SOLUTION THE BEST INTEGER SOLUTION FOUND SO FAR ?
YES
NO
RECORD IT AS THE BEST
DELETE THIS LINEAR PROGRAM
TERMINATE (WE HAVE THE BEST INTEGER SOLUTION, IF ONE EXISTS)
IF THERE ARE NO MORE LINEAR PROGRAMS, SOLVED OR UNSOLVED, TERMINATE. OTHERWISE, EITHER SOLVE SOME UNSOLVED LINEAR PROGRAM (STEP 2), OR DETERMINE A BOUND TO SOME SOLVED LINEAR PROGRAM (STEP 4), OR MAKE SOME SOLVED LINEAR PROGRAM INTO ONE OR MORE UNSOLVED LINEAR PROGRAMS (STEP 5).
STEP 4 (BOUND)
FOR SOME SOLVED LINEAR PROGRAM, CAN IT BE DETERMINED THAT EVERY INTEGER SOLUTION HAS OBJECTIVE VALUE AT LEAST AS LARGE AS THE BEST INTEGER SOLUTION SO FAR ?
NO
YES
DELETE THE LINEAR PROGRAM
STEP 5 (BRANCH OR CUT)
ADJOIN ONE OR MORE RESTRICTIONS TO SOME SOLVED LINEAR PROGRAM TO GIVE ONE OR MORE UNSOLVED LINEAR PROGRAM

The Invention herein described was made in the course of or under a contract or subcontract thereunder, with the Department of the Navy.

The present invention relates to a method for finding optimum integer solutions to linear programs. In many linear programs, it is necessary to obtain integer values for certain variables. Starting with a solution of the linear program obtained, for example, by the Simplex Method, the present method develops bounds which are utilized to force certain variables to be integers with a minimum of machine calculations.

T930,002

AUTOMATIC PROCESS FAST DIGITAL IMAGE REGISTRATION

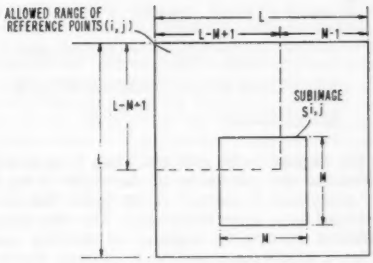
Daniel I. Barnea, Tel Aviv, Israel, and Harvey F. Silverman, Mohegan Lake, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of abandoned application Ser. No. 263,482, June 16, 1972. This application Dec. 6, 1973, Ser. No. 422,503

Int. Cl. G06f *15/20*

U.S. Cl. 444—1

14 Sheets Drawing. 28 Pages Specification



This is an automatic process for the detection of local similarity between two structured data sets in order to achieve image registration. A class of sequential similarity detection processes for effecting image registration are disclosed. These processes determine the best mapping of a selected window area of one of the data sets onto the other data set. Reference points for the mapping are selected sequentially and for each reference point selected an error function is computed to determine whether the window correlates with the search area at the selected reference point. Correlation is determined by comparing the error function to a threshold sequence and terminating the process for a particular reference point when the error value exceeds the threshold value.

T930,003

METHOD FOR COMPACTING VECTOR GENERATION DATA

Paul F. Nee, Gaithersburg, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of abandoned application Ser. No. 267,868, June 30, 1972. This application Jan. 24, 1974, Ser. No. 436,257

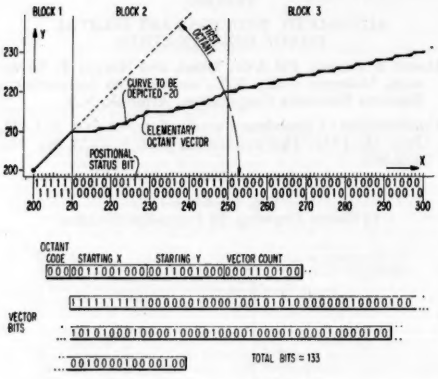
Int. Cl. G06f *7/00*
U.S. Cl. 444—1

7 Sheets Drawing. 11 Pages Specification

A method is disclosed for compacting vector generation data for transmission from a data processor to a

visual display device. The data to be compacted is a sequence of cartesian coordinates representing elementary octant vectors composing the figure to be displayed. The method is based on the concept of dividing the sequence of elementary vectors, Figure 4a, into groups of contiguous elementary vectors which lie within the same octant. An elementary octant vector lying within a given octant must either lie along the cartesian grid line or

FIG. 4a



along the diagonal to the grid line. Thus, if the octant is identified and the coordinates of the origin of the first vector given, each elementary octant vector therein can be identified by a single binary digit. The data compaction method converts the sequence of cartesian coordinates into a serially compacted vector message, Figure 4b, having origin coordinate, octant identity, vector count, and vector status bit components.

T930,004

CONTROL CIRCUIT

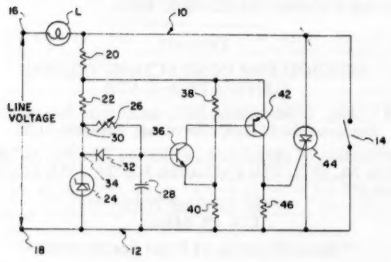
Peter Schmidt, Rult, Germany

Filed Jan. 28, 1974, Ser. No. 437,256

Claims priority, application Germany, Jan. 27, 1973, P 23 03 986.3

Int. Cl. H02j *3/04*
U.S. Cl. 307—43

1 Sheet Drawing. 8 Pages Specification



A phase control circuit for use with cinematographic apparatus includes a thyristor and a charging circuit for gating the thyristor on and off, to limit the power applied to a lamp so as to permit operation of the lamp from a 220 volt power source. The circuit includes a changeover switch which permits operation of the lamp from 110 volt power source.

T930,005

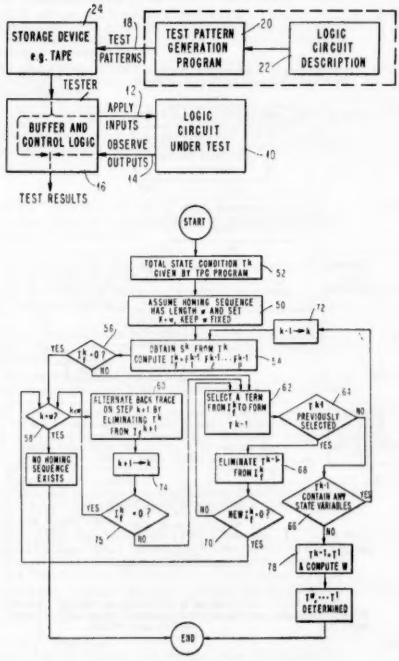
METHOD FOR PLACING AN ASYNCHRONOUS SEQUENTIAL CIRCUIT INTO A STATE FOR TESTING

Dennis K. Chia, New Paltz, and Mu-Yue Hsiao, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of abandoned application Ser. No. 265,035, June 21, 1972. This application Feb. 21, 1974, Ser. No. 444,449

Int. Cl. G06f *15/20*
U.S. Cl. 444—1

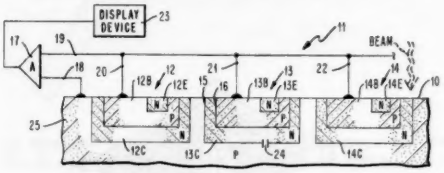
2 Sheets Drawing. 23 Pages Specification



A method for determining the homing sequence input patterns required to place any asynchronous sequential circuit into a set-state for testing is provided. The set-state is determined from the total states of an asynchronous sequential circuit generated by any test pattern generating machine, then deriving the total-state sequence from said set-state in a reverse order starting with the last total-state. The end of the total-state sequence is determined by recognizing the total-state in which there are no state variables. The total-state input patterns generated from this method are utilized in the forward order to place the asynchronous sequential machine into

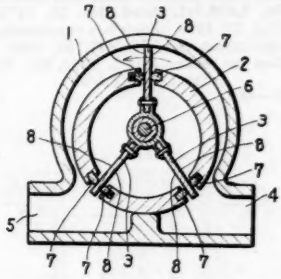
said set-state regardless of the initial state of said asynchronous sequential circuit.

T930,006
PROCESS AND DEVICE FOR DETECTING DEFECTS IN A SEMICONDUCTOR ELEMENT
Pierre J. Beaufrere, Leparc; and Philippe Le Corneur, Des Platanes, France, assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of application Ser. No. 297,573, Oct. 13, 1972. This application Mar. 13, 1974, Ser. No. 450,704
Claims priority, application France, Dec. 29, 1971, 7147913
Int. Cl. G01r *31/02, 31/26*
U.S. Cl. 324—51
2 Sheets Drawing. 14 Pages Specification



The apparatus is for checking the junctions of an integrated circuit driver by scanning the device surface with a beam, typically an electron beam. The beam acts as the source of an indirect current near a junction. Junctions are tested systematically by connecting similar combinations of regions in parallel and detecting with an amplifier induced signals produced by generated electron-hole pairs. The nature of the induced signals will vary from a norm when defects are present.

T930,007
NONLUBRICATING TYPE VANE PUMP
Osamu Takahashi, Kariya, and Yoshihiko Sumiya, Okazaki, Japan, assignors to Nippondenso Co., Ltd., Showacho, Kariya-shi, Aichi-ken, Japan
Filed Mar. 28, 1974, Ser. No. 455,808
Claims priority, application Japan, July 9, 1973, 48/77,637
Int. Cl. F01c *19/00;* **F04c** *15/00, 27/00*
U.S. Cl. 418—137
1 Sheet Drawing. 5 Pages Specification



A nonlubricating type vane pump having vanes which are rotatably fitted on a shaft and which are supported by carbon shoes in a rotor is provided wherein the vanes are coated on both surfaces thereof with a lubricating material of high viscosity for reducing the noise caused by the sliding contact of the vane surfaces on the carbon shoes during operation of the vane pump. Silicone oil or silicon grease of high viscosity coated on both surfaces of the vanes or coated on the carbon shoes as well have been tested and found to significantly reduce noise during operation of the pump.

REISSUES

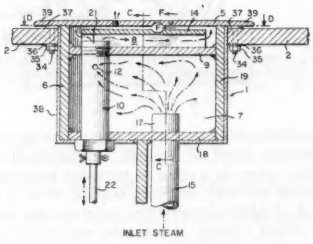
JANUARY 7, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,292
FOOD FRESHENER-WARMING DEVICE

Davis Piper, Tipton, and Harry D. Forse, Anderson, Ind., assignors to Food-Quik Products, Inc., Anderson, Ind.

Original No. 3,630,761, dated Dec. 28, 1971, Ser. No. 84,373, Oct. 27, 1970, which is a continuation of abandoned application Ser. No. 49,764, June 25, 1970. Application for reissue July 3, 1972, Ser. No. 268,461
Int. Cl. B01j *3/00*
U.S. Cl. 99—483 11 Claims



1. A food freshener and/or warming device comprising:

a. a closed vessel;

b. partition means within said vessel dividing the interior thereof into first and second chambers;

c. means for continuously [recirculating] *circulating* steam through said first chamber *comprising a steam inlet having an opening in said first chamber spaced above the bottom thereof and a steam outlet having an opening disposed in the bottom of said first chamber whereby steam from a source thereof may be continuously caused to enter said first chamber through said steam inlet thereof, pass through said first chamber and exit said first chamber via said steam outlet thereof;*

d. passage means having an inlet in said first chamber and an outlet in said second chamber;

e. operator controlled valve means for controlling the flow of steam through said passage means from said first chamber to said second chamber; and

f. aperture means for applying steam from said second chamber to a food item.

28,293
ADJUSTABLE MERCHANDISE SUPPORT WITH SPACED, MOLDED SHELVES

Rafael T. Bustos, Atlanta, Ga., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Original No. 3,664,274, dated May 23, 1972, Ser. No. 88,560, Nov. 12, 1970. Application for reissue Apr. 1, 1974, Ser. No. 456,800
Int. Cl. A47b *13/02*
U.S. Cl. 108—144 14 Claims

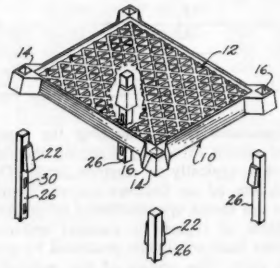
1. In a shelf support arrangement for merchandise wherein a plurality of identical shelves supported from the floor may be positioned at different levels.

a. vertical support members, arranged to define a quadrangle,

b. at least one shelf having corners supported on said vertical members at each of the corners of said shelf,

c. each of the corners of said shelf being formed with a recess therein comprising at least two angularly disposed faces corresponding with and complementary to angularly disposed faces on each respective vertical member,

d. a plurality of openings spaced vertically on each of said support members and each opening representing a potential position for one corner of said shelf,



e. a tapered plug member for each support member and shelf recess, each plug member having a protrusion on the interior thereof inserted in a respective opening on a support member and all of said plug members being so engaged with a corresponding corner vertical support member to locate said shelf at the same elevation supported at each respective corner and said shelf being wedged on said tapered plug members to retain said shelf substantially at the selected location and to prevent said shelf from becoming completely dislodged therefrom when merchandise is loaded thereon but permitting said shelf to be lifted from said plug members and said plug members being repositionable in different locations to receive said shelf repositioned thereon.

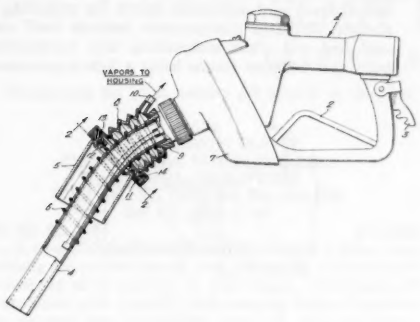
28,294
VAPOR SEAL FOR DISPENSING NOZZLES

William B. Hansel, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Original No. 3,566,928, dated Mar. 2, 1971, Ser. No. 843,719, July 22, 1969. Application for reissue Feb. 5, 1973, Ser. No. 329,934
Int. Cl. B65b *31/06*
U.S. Cl. 141—52 5 Claims

5. In combination, a liquid fuel dispensing nozzle with a discharge spout for insertion into the ferromagnetic fillpipe of a motor vehicle fuel tank, an elongated imperforate flexible bellows of cylindrical outer configuration sealed at one end thereof to the body of said spout, said bellows surrounding said spout in spaced relation thereto to provide a vapor receiving chamber therearound which is coupled to the interior of said fillpipe; and a continuous substantially flat sealing element of magnetic material

secured to the other end of said bellows, said sealing element being held against the outer end of said fillpipe



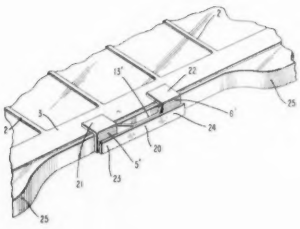
by magnetic attractive forces to thereby form a positive flat face seal against the outer end of said fillpipe.

28,295

ELECTRIC THERMAL WINDOW WITH AN ADJUSTABLE TERMINAL STRUCTURE

Hans Dieter Peetz, Aachen, and Hermann Lurssen, Laurensberg, Germany, assignor to Saint Gobain Industries

Original No. 3,634,654, dated Jan. 11, 1972, Ser. No. 72,132, Sept. 14, 1970, which is a continuation of abandoned application Ser. No. 666,795, Sept. 11, 1967. Application for reissue Apr. 8, 1974, Ser. No. 458,871
Claims priority, application France, Sept. 13, 1966, 76,151
Int. Cl. H05b *3/06*
U.S. Cl. 219—522 **14 Claims**



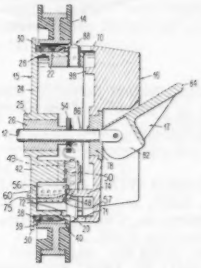
1. A thermal window comprising a glass pane, a heating grid including a bus band affixed to the glass pane, and a terminal having spaced portions fixedly attached to the bus band at spaced points, the terminal intermediate the fixed points of attachment being free of attachment to the glass pane and the bus band and capable of easy change in dimension in response to external stimuli, said terminal having a strap portion attached to said spaced portions and an intermediate part which is offset from the spaced portions, the width of the bus band being greater than the width of the spaced portions of the terminal attached thereto, and in which the terminal lies parallel to the edge of the glass pane, is attached to the bus band by spaced arms and has a contact attached to the offset part of the strap portion extending parallel to the edge of the glass pane.

28,296

POSITIVE SEATING REEL LATCHING APPARATUS

Thomas E. Mallette, Broomfield, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Original No. 3,532,286, dated Oct. 6, 1970, Ser. No. 771,597, Oct. 29, 1968. Application for reissue Oct. 11, 1973, Ser. No. 405,602
Int. Cl. B65h *17/02*
U.S. Cl. 242—68.3 **15 Claims**



1. In a reel latching mechanism having a reel hub mounted on a drive shaft, [an] *a radially movable* expansion member associated with said reel hub, and a *first axially movable* cam member movable with respect to the expansion member to cause outward radial movement of the expansion member into latching engagement with the inner surface of a reel when the reel is positioned on said reel hub, the combination therewith of:

reel positioning means including reel engaging members movable to align the reel on said reel hub in outer concentric relation to said expansion member, [and]

a second axially movable cam member movable with respect to the reel positioning means, and

movable actuating means [coordinated with] *coordinating* movement of said *first and second* cam [member] *members* to initiate outward radial extension and axial advancement of said reel engaging members into engagement with the reel whereby to align the reel in position over said expansion member prior to expansion of said expansion member into latching engagement with the reel.

28,297

INDUCTION AMMETER WITH SELF INDUCED RESTORING TORQUE

Lester R. Void, Perkasie, Pa., assignor to Electro-Mechanical Instrument Div., VLN Corp., Perkasie, Pa.

Original No. 3,777,265, dated Dec. 4, 1973, Ser. No. 325,069, Jan. 19, 1973. Application for reissue Mar. 14, 1974, Ser. No. 451,163
Int. Cl. G01r *1/16, 1/20, 5/16*
U.S. Cl. 324—146 **8 Claims**

1. An electric meter comprising:

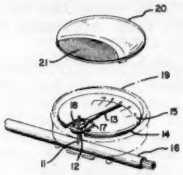
a rotatably mounted arbor,

[a] permanent magnet *means* mounted on said arbor, indicating means mounted on said arbor,

a dial blank of soft magnetic material positioned in relation to said indicator so that rotation of said indicator registers the magnitude of an electrical quantity with respect to indicia on said dial blank,

tabs extending from said dial blank into proximity with the two poles of said permanent magnet *means* so that the two poles of said permanent magnet *means* are aligned with said two tabs at the unenergized setting of said indicator with respect to said indicia, and

means for establishing a magnetic field approximately transverse to [the line of said tabs] *poles of said*



permanent magnet means to rotationally deflect the magnet as a measure of the electrical quantity induc ing the magnetic field.

28,298

GAS LASER WITH ADJUSTABLE MIRROR

William P. Kolb, Jr., Manhattan Beach, and Dale E. Crane, Sunnyvale, Calif., assignors to Hughes Aircraft Co., Culver City, Calif.

Original No. 3,609,587, dated Sept. 28, 1971, Ser. No. 869,632, Oct. 27, 1969. Application for reissue July 10, 1972, Ser. No. 270,383

Int. Cl. H01s *3/02*

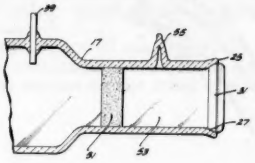
U.S. Cl. 331—94.5 **4 Claims**

1. A gas laser comprising:

an elongated plasma tube having first and second ends;

regenerative cavity means including a fixed mirror at said first end and an adjustable mirror at said second end for defining a laser-regenerative path between said mirrors through said plasma tube;

isolation means disposed in said plasma tube and spaced from said adjustable mirror for providing a gastight discharge compartment between itself and said first end while maintaining said regenerative path, said isolation means being a light-transmissive



window perpendicularly positioned with respect to said regnerative path and acting in conjunction with said adjustable means as an etalon tuned to a desired wavelength;

an active laser gas disposed in said discharge compartment of said plasma tube; and

means coupled to said active laser gas for exciting said gas to a lasing state.

PLANT PATENTS

GRANTED JANUARY 7, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,674

CALLISTEMON PLANT

Carl H. Tasche, 5470 El Jardin St., Long Beach, Calif. 90815

Filed Aug. 20, 1973, Ser. No. 389,574
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of Callistemon plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an attractive and graceful, soft weeping habit of growth, with pendent lateral branches, especially when in bloom, originating in spaced horizontal whorls from upright single or branched leaders, forming an upright and compact large shrub which becomes a small tree in time, dense and attractive green foliage which is light greenish-bronze when young and forming multiple new terminal growth shoots emanating from the ends of most flowering spikes and contributing to an unusual foliage density and clustering of subsequent flowering branches, large brilliant red bottlebrush flower spikes, ranging up to ten inches in length and of larger diameter than those of common species, said spikes being prolifically produced in clusters of six to ten or more emanating from one point, and a habit of producing sterile abortive seed capsules which shed immediately after flowering instead of persisting on the branches as is typical of most species.

3,675

ILEX BLUE PRINCESS PLANT

Kathleen K. Meserve, St. James, N.Y., assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Aug. 9, 1973, Ser. No. 387,041
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—65 **1 Claim**

1. A new and distinct variety of Ilex plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous, broad, densely branched decorative plant producing an abundance of pistillate flowers, bearing bright red fruit on stems longer than other Ilex and flowering through the growing season with bright red fruit maturing in the order of the flowering, the plant bearing leaves of shiny, rich green often turning slightly reddish in winter, the leaves and branches being of a color when taken in combination giving the plant a bluish-purple cast, and the plant having more cold tolerance than other red berried evergreen Ilex.

PATENTS

GRANTED JANUARY 7, 1975

ERRATA

For CLASS	See PATENT NO.
029-433	3,858,318
029-496	3,858,319
053-138	3,858,365
084-001	3,858,480
131-081	3,858,593
239-017	3,858,620
104-166	3,858,626
246-066	3,858,820
356-102	3,858,851
252-089	3,858,854
267-110	3,858,858
280-047	3,858,929
356-071	3,858,977
034-075	3,859,004
053-183	3,859,062
161-067	3,859,151
161-182	3,859,153
250-282	3,859,226
423-657	3,859,373
340-015	3,859,591

PATENTS

GRANTED JANUARY 7, 1975

GENERAL AND MECHANICAL

3,858,241

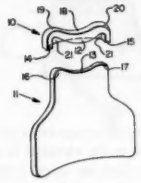
SHOCK ABSORBENT COLLAR FOR ARMOR PLATE

Philip E. Durand, Hudson, and Lonnie H. Norris, Milford, both of Mass., assignors to the United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 26, 1974, Ser. No. 454,899

Int. Cl. F41h *1/02*

U.S. Cl. 2—2.5 **6 Claims**



1. The combination of a shock absorbent collar and a protective frontal torso armor plate, said collar fitting closely against the top edge of said armor plate and substantially following the contours of said top edge and being flush with the back surface of said armor plate, said collar being formed from expanded plastic to impart crushability and impact absorbency characteristics thereto, said expanded plastic having a density of from about 1 to about 10 pounds per cubic foot, said collar having a depth from its upper surface to its surface of contact with said armor plate sufficient to cause absorption of enough of the energy imparted to said armor plate when said armor plate is suddenly translated upwardly toward the head of the wearer of said armor plate to prevent serious injury to the neck, chin, or other portions of the head of said wearer.

3,858,242

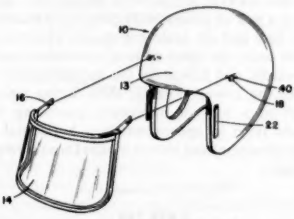
HAND GUN BULLET PROOF FACE SHIELD

Elwyn R. Gooding, 120 Darwin Rd., Pinckney, Mich. 48169

Filed Apr. 16, 1973, Ser. No. 351,656

Int. Cl. A61f *9/00*

U.S. Cl. 2—10 **5 Claims**



1. In combination with a protective helmet, a bullet proof face shield comprising a pair of inner and outer transparent panels formed of high impact resistant plastic and arranged in a face-to-face predetermined spaced relation, spacer means maintaining said panels in said spaced relation so that a dead air space is formed therebetween, said inner panel being substantially thicker than said outer panel, said outer panel being of reduced thickness relative to said inner panel to enable said outer panel to flex inwardly into said dead air space upon initial impact of a bullet with said outer panel, said dead air space also providing a space in between said panels into which a spent bullet passing through said outer panel is trapped, encircling frame means supporting said panels, and means movably supporting said frame means on said helmet, said panels and said dead air space cooperating to form a ballistic barrier capable of preventing the passage of small handgun bullets through said face shield.

3,858,243

METHOD OF MANUFACTURE OF JACKETS AND LIKE GARMENTS PROVIDED WITH FASTENING ELEMENTS

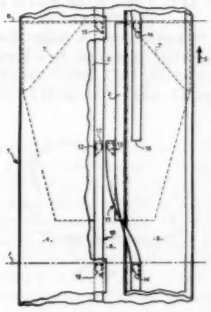
Claude Raymond Pierron, Epinal; Jean Paul Joseph Jenny, Decines, and Robert Zuccaro, Epinal, all of France, assignors to Plymatig, Darnieulles, France

Filed July 11, 1973, Ser. No. 378,140

Claims priority, application France, July 11, 1972, 72.25124

Int. Cl. A41d

U.S. Cl. 2—243 R **12 Claims**



1. Method of continuous industrial manufacture of jackets, overalls, blouses, gowns and garments of the same kind, which are formed by means of a series of mechanized or automated operations from at least one indefinite initial web of supple sheet material in a known per se manner comprising the steps or laying on the said web fastening elements forming ties such as waist bands, neck attachments and wrist attachments, and fixing them at regular intervals on the said web, the improvement comprising the steps of laying the said tie elements on the said initial web in perpendicular relationship to their normal direction of use and providing them with lines of gluing and folding through 45° enabling them to be turned over into their direction of use.

3,858,244

LEATHER BELT MANUFACTURE

Richard L. Mann, P.O. Box 69, Woodstock, Conn. 06281

Filed Dec. 17, 1973, Ser. No. 425,120

Int. Cl. A41f *3/02*, *9/00*

U.S. Cl. 2—338 **1 Claim**

1. A method of reducing waste of leather in the manufacture of leather belts made for apparel use comprising

slitting a tanned and finished whole hide into one-piece strips of uniform width varying in length;

adhesively joining a plurality of said strips end-to-end to form a composite strip at least as long as the composite length of the leather contents of belts to be made therefrom;

finishing the adhesive seams to match the surface color or grain of the strips on both sides;

coiling the joined strips for transportation purposes;

unwinding the coil to feed off successive lengths of leather of uniform width;

cutting off successive lengths fed off the coil to provide lengths of leather corresponding to those present in separate finished belts to be made therefrom, leaving no waste other than at the inner end of the coil; and

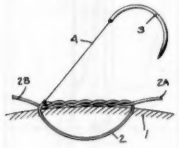
making separate belts from said cut lengths.

3,858,245

METHOD OF APPLYING HAIR WITH INDIVIDUAL SUTURES

Michael A. Nate, II, and Maurice A. Mann, both of New York, N.Y., assignors to Hair Again Ltd., New York, N.Y.

Filed May 18, 1972, Ser. No. 254,438
Int. Cl. A61f 1/00; A61l 17/00
U.S. Cl. 3—1 **5 Claims**



1. The method of applying hair wefts to a portion of a scalp which comprises

inserting synthetic polymeric sutures below the dermis of the scalp leaving the ends of the sutures exposed above scalp, each suture being inserted once in the scalp;

for each such suture, intertwining its exposed end portions together and sewing a thin thread through and around said end portions, comprising passing said thread through and around said interwinded suture at several spaced places between the points of entry and exit of the suture from the dermis and knotting said thread at each such place, and

affixing hair wefts to the exposed portion of said sutures.

3,858,246

PROSTHETIC CARDIAC VALVES

Simcha Milo, 1500 E. Riverside, Apt. 204 D, Austin, Tex. 78741

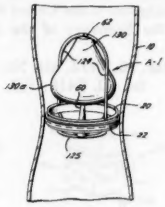
Filed Apr. 19, 1973, Ser. No. 352,590
Int. Cl. A61f 1/22
U.S. Cl. 3—1 **6 Claims**

1. A prosthetic cardiac valve adapted to be disposed in the aortic, mitral or tricuspid rings comprising:

an annular valve seat adapted to be attached to the aortic, mitral or tricupsid rings;

a valve element having generally tear-drop external configuration, with an annular seating surface at substantially its maximum diameter portion for seating engagement with said valve seat for closing blood flow through said valve seat; and,

guide means for axially guiding said valve element having a tapered axial opening in each end of said valve element and having a pair of tapered axially disposed guide pins, with one pin being in each of said openings, to maintain said valve element substantially in axial alignment at all



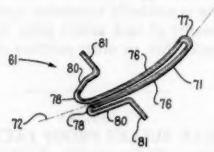
times as said valve element moves to and from the closed position wherein the valve element is seated in contact with said valve seat and an open position wherein the valve element is away from said valve seat during pulsatile flow of blood through the valve, whereby turbulance of the blood during such flow around the valve is minimized.

3,858,247

SCALP ANCHOR FOR HAIRPIECE

Jack Bauman, P.O. Box 25310, Los Angeles, Calif. 90025

Filed Apr. 24, 1973, Ser. No. 354,019
Int. Cl. A61f 1/00; A61b 17/00
U.S. Cl. 3—1 **4 Claims**



1. In combination with a hairpiece for covering a wearer's scalp, an anchor for the hairpiece comprising an elongated clip of wire-like material symmetrical about a fore and aft axis and including a pair of downwardly concave arcuately bowed, side by side, fore and aft, scalp-engageable portions joined at their forward ends, the after ends of the bowed portions recurving upwardly and forwardly for approximately one half the length of the bowed portions then flaring laterally outwardly to form a pair of oppositely extending hairpiece-engaging tabs lying in approximately a horizontal common plane in side elevation; and thread means for securing said clip to the hairpiece.

3,858,248

ARTIFICIAL BREAST WITH EXTENSIONS FOR USE SUBSEQUENT TO MASTECTOMY

Sylvester L. Crowe, 501 W. Madison St., Franklin, Ind. 46131

Filed Oct. 9, 1973, Ser. No. 404,223
Int. Cl. A41c 3/10; A61f 1/00
U.S. Cl. 3—36 **5 Claims**

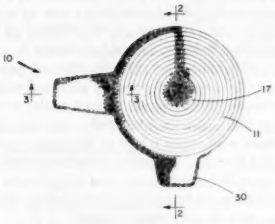
5. An artificial breast for use following a mastectomy which is fittable within a brassiere comprising:

a front body piece which is woven from thread and having a most forward center portion with said thread extending rearwardly in a pattern of stitches forming a convex configuration for said front body piece simulating a human bust contour with said body piece having a hollow interior and a circumferentially extending rear edge portion;

a mass of tangled threads loosely positioned within and filling said hollow interior; and,

a flat back piece attached to said rear edge portion and enclosing said hollow interior and said tangled threads, said back piece being woven from thread;

said front body piece and said flat back piece are crocheted; said thread extending rearwardly in a pattern of stitches follows a path from said center portion to said rear edge



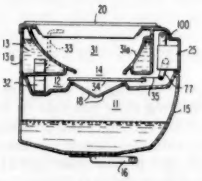
portion with the number of said stitches along said path controlled in a manner to form said convex configuration; said manner of controlling said stitches includes positioning said switches in a plurality of adjacent rows extending around said center portion with a first row in a plane immediately adjacent said center portion having a smaller number of switches than a second row immediately near said edge portion with the number of stitches increasing in said rows from said first row to said second row.

3,858,249

SELF-CONTAINED SANITARY CLOSET FOR VEHICLES OR THE LIKE

Durrell Unger Howard, 306 Krameria Dr., San Antonio, Tex. 78213

Filed Oct. 10, 1973, Ser. No. 405,214
Int. Cl. E03d *11/02, 11/00;* **B60r** *16/04*
U.S. Cl. 4—10 **17 Claims**



1. A sanitary closet comprising

a. a bowl portion having a bottom outlet,

b. a waste receptacle positioned below said bowl for receiving liquid and solid waste admitted to said bowl and passing through said bottom outlet,

c. closure means operable between open and closed positions for selectively permitting solid and liquid waste to pass from said bowl to said waste receptacle,

d. means defining a separate reservoir for flushing fluid, said reservoir being positioned above said bowl outlet and around said bowl portion,

e. sump means positioned below said bowl outlet and about said waste receptacle for collecting flushing fluid when said closure means is closed,

f. means defining a separate flow path for said flushing fluid from said bowl to said sump when said closure means is in a closed position, thereby bypassing said waste receptacle,

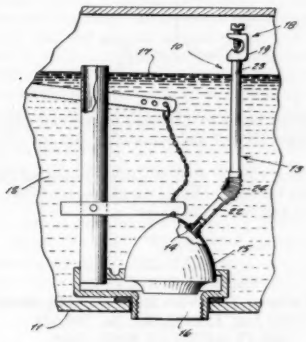
g. pump means for forcing said fluid from said reservoir to said bowl to flush said bowl, said means also defining a separate flow path to return said flushing fluid from said sump to said reservoir.

3,858,250

ACTUATING MECHANISM FOR TOILET FLUSH TANK OR DUAL FLUSH TYPE

Anthony Coglitore, 52 Copley St., Staten Island, N.Y. 10314

Filed Aug. 16, 1973, Ser. No. 388,792
Int. Cl. E03d *1/34, 5/02*
U.S. Cl. 4—67 A **1 Claim**



1. In an actuating mechanism for a toilet flush tank, the combination of a toilet tank having a rubber float ball valve normally seated on a drain outlet that communicates with a toilet bowl, said valve including a liftable hollow rubber ball, and control means secured to said ball for controlling an amount of water to be flushed from said tank during each flushing action, said control means comprising a hollow tube unit communicating with the interior of said ball and extending upward above water level within said tank, said hollow tube unit consisting of a two straight plastic tubes having an accordian plastic tube intermediate and adjoining the respective ends of said plastic tubes, a lower of said straight tubes extending angularly upwardly from a side of said float ball, said intermediate accordian tube being axially curved so intermediate a lower end thereof connects to said lower angularly extending straight tube and the upper end thereof extending vertically upward and said upper straight tube extending vertically upward therefrom, said control means further comprising an air control valve at the upper end of said upper straight tube and means for adjusting the rate of airflow through said hollow tube unit.

3,858,251

INCINERATOR TOILET

Walter J. Vollrath; Richard J. Vollrath, both of Sheboygan; Paul R. Virnoche, Newton; Joseph Turk, Sheboygan; Paul E. Gerdes, Sheboygan, and Roy W. Singer, Sheboygan, all of Wis., assignors to Polar Ware Company, Sheboygan, Wis.

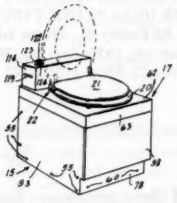
Division of Ser. No. 168,577, Aug. 3, 1971, Pat. No. 3,789,434.
This application Sept. 17, 1973, Ser. No. 398,196
Int. Cl. A47k *11/02*
U.S. Cl. 4—131 **17 Claims**

1. In an incinerator toilet unit including a chassis housing an upwardly opening combustion chamber and apparatus for effecting combustion therein and for disposing of products of combustion, and a top closure removably seated on said chassis and carrying a toilet seat over said chamber, the improvement comprising:

the chassis frame including a base plate having an upward rear wall panel, with upstanding flanges along side edges

of the base plate and forwardly extending flanges along the sides and top of said back panel;

a horizontally lying generally U-shaped top frame bar having rear ends secured to said rear wall panel within the juncture corners of said back wall panel flanges;



spaced upright frame bars secured to said base plate within said flanges thereof and supporting said top frame bar; and

side and front cabinet closure panels suspended from said top frame bar and enclosing the chassis frame in cooperation with said back wall panel.

3,858,252

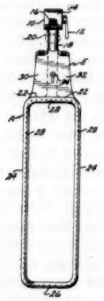
SHOWER STRUCTURE

Olgierd Z. Ejchorszt, 5580 Vesuvian Walk, Long Beach, Calif.

Filed Aug. 1, 1973, Ser. No. 384,606

Int. Cl. A47k *3/00*; B05b *15/06*

U.S. Cl. 4—145 **5 Claims**



1. In combination with a tubular water supply line that projects outwardly at an elevated position into a shower enclosure from one wall which partially defines the latter, a shower structure that selectively permits the body only of the user to be subjected to a spray, the hair and head of the user to be subjected to a spray, or the hair and head of the user, together with the body of the user, to be subjected to a spary, which shower structure includes:

a. multi-position valve means connected to, and supported from, said water supply line, said valve means having first and second outlets, and said valve means including at least one movable element that selectively controls the water flow to either said first or second outlet or both, when said element is moved to a particular position as well as the rate at which water flows through said valve means to said outlets;

b. a shower head that occupies a fixed position relative to said valve means and is in communication with said first outlet;

c. two oppositely extending substantially horizontal tubular cross pieces connected to said second outlet and occupying a fixed position relative thereto;

d. two vertically disposed, downwardly and inwardly tubular legs that depend from the outer ends of said cross pieces and are in communication therewith;

e. a tubular cross member that connects lower ends of said legs and in communication with the interiors thereof; and

f. spray-forming means on the interior surfaces of said cross pieces, legs, and cross member most adjacent said enclosure that direct fine jets of water into said enclosure below the head of a user when water is discharged into said cross pieces, legs, and cross member, with the height of said spray being controlled by the rate at which water is discharged into said legs and the height of the water level maintained therein, said handle when in a first position maintaining said first valve in a closed position, said handle when in a second position allowing said valve to discharge water through said second outlet to said cross pieces, legs and cross member only, said handle when in a third position allowing water to discharge concurrently through said first and second outlets to said shower head and said spray-forming means, and said handle when in a fourth position permitting water to discharge through said first outlet only to said shower head.

3,858,253

COMBINATION FURNITURE

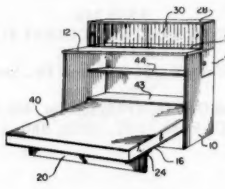
Adrian A. Lauzon, 5211 Cartier St., Apt. 1, Montreal, Quebec, Canada

Filed Aug. 16, 1973, Ser. No. 388,768

Claims priority, application Canada, June 27, 1973, 175078

Int. Cl. A47c *13/38*; A47b *81/00*

U.S. Cl. 5—2 R **6 Claims**



1. A piece of furniture adapted to be transformed into a bed comprising:

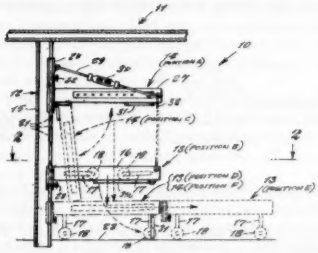
a. a frame comprising rectangular side panels, an upper surface panel extending from one side to the other side and pivoted about its rear edge, and a facing part having a first lower panel extending across the lower part of the frame and fixed to each of said sides, and a second upper panel extending substantially over the full front surface of the frame and extending behind the said first lower panel, a retaining plate secured perpendicularly to the edge of said upper panel located behind the said first lower panel for supporting a mattress disposed on said upper panel, the said upper panel being connected to the upper edge of said first lower panel by a first hinge so as to permit a movement of the second upper panel from a vertical to a horizontal position;

b. a rigid L-shaped member comprising a third and fourth panel extending across the upper portion of the second panel and connected by a second hinge along its apex to said second panel so that the third panel is adapted to cover the top surface of the second panel when the fourth panel projects forwardly of the second panel, the said member being adapted to tilt downwardly about the second hinge so that the said third panel projects forwardly of said second panel, whereby the first panel and the third panel form a base for the second panel when the latter is pivoted downwardly about the first hinge, and the upper surface panel has a downward lip along its forward

edge adapted to hold the said second panel in its raised position;

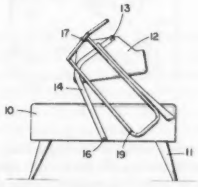
c. stretchable elastic means connected between the lower edge of the second panel and a location adjacent the lower intersections of the side panels and the said lower panel, wherein the tension of the said elastic means increases uniformly from the vertical to the horizontal position of the second upper panel.

3,858,254
ALL-WAY REST
Edmund S. Coomes, Rt. 1, Box 78F, Biggs, Calif. 95917
Filed Oct. 15, 1973, Ser. No. 406,208
Int. Cl. A47c *17/40, 17/14*
U.S. Cl. 5—8 **2 Claims**



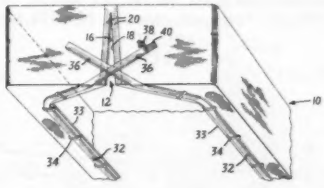
1. In an all-ways rest, the combination of a top bunk and a lower bunk each one of which is adjustable in position so to selectively form a raised bunk bed with said bunks over each other, a divan with a back rest or a double bed wherein said lower bunk accordingly is vertically movable from said raised position to a lowered position upon a floor from whense it is horizontally movable so to be away from below said top bunk, wherein said top bunk accordingly is vertically movable between a raised position over said lower bunk and a lowered position alongside said horizontally moved lower bunk when forming said double bed; said top bunk being pivotable between a horizontal and depending downward position to form said divan back rest wherein said upper bunk has a pair of spaced apart shoes rigidly secured thereto that slide along a pair of vertical rails of a stationary frame.

3,858,255
CONVERTIBLE SOFA-BED IMPROVEMENT
George T. Purves, Jr., 5337 Shorewood Dr., Indianapolis, Ind. 46220
Filed Dec. 13, 1973, Ser. No. 424,362
Int. Cl. A47c *17/00, 17/16*
U.S. Cl. 5—45 **3 Claims**



1. In a convertible sofa-bed structure, having an elevated horizontally disposed first frame, a seat cushion supported on said frame, an armrest frame of a length less than the width of said first frame and seat cushion pivoted at its lower forward end to said first frame inwardly from one end thereof and swingable in a plane parallel therewith, said armrest frame being of a height greater than the height of said seat cushion, a substantially L-shaped link having its lower branch pivoted to said first frame inwardly of the ends of said armrest frame in the same horizontal plane with said armrest pivoted and disposed between said armrest frame and said first frame, a backrest supported in upstanding position of said seat cushion, the upper branch of said link being of a length to have its upper end project beyond the forward end of said first frame when pivotally moved to substantially horizontal position to insure a proper meeting of the adjacent edges of the seat cushion and backrest, a pivot on the free end of the upper branch of said link connecting the said link with said backrest inwardly from the upper end of said backrest a distance equal to the projection of said link beyond said first frame when in horizontal position, a bracket projecting rearwardly from said backrest near the lower end thereof, a leg projecting upwardly from the rear end of said armrest frame and serving as a support for the backrest to maintain the backrest at an angle with respect to the surface of the seat cushion comfortable to the user of the seat cushion, a pivot connecting the rear end of said bracket with said leg; said leg being of a length substantially equal to the elevation of said seat cushion and when resting on the floor to act as a support for the backrest in alignment with the seat cushion with little if any of the first frame projecting above the surface of the backrest, and stop means secured to the first frame near its forward edge to support said second frame when swung in horizontal alignment with the first frame, the improvement which comprises: a backrest support bar extending from the leg and having a support member pivotally attached to the backrest at a point intermediate the ends of the backrest.

3,858,256
FITTED BEDCLOTHES
Andrew E. Beer, 25 Sutton Pl., New York, N.Y. 10022
Filed Nov. 1, 1972, Ser. No. 302,881
Int. Cl. A47g *9/00*
U.S. Cl. 5—334 C **3 Claims**



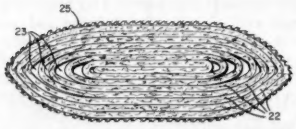
1. In fitted bedclothes, the improvement of a closable split formed in a marginal portion of the bedclothes and spaced from the corners thereof, including means for releasably drawing sides of the split toward each other and adjusting the fit of the bedclothes on a mattress, the drawing and adjusting means including a band extending along and coupled to a peripheral edge of the bedclothes, an end portion of the band extending from the bedclothes adjacent a first side of the split and having means for releasably engaging the strip with the bedclothes adjacent a second side of the split in any selected one of a plurality of longitudinal positions relative to the bedclothes adjacent the second side of the split.

3,858,257
RESILIENT PILLOW
Samuel Young, 14 Crest Rd., Danbury, Conn. 06810
Filed Oct. 15, 1973, Ser. No. 406,148
Int. Cl. A47g *9/00*; **A47c** *27/00*
U.S. Cl. 5—337 **1 Claim**

1. A highly resilient, compressible pillow body, adapted for envelopment by conventional covering means, comprising:

A. between about four and about thirty-two layers of bonded synthetic fibers stacked in juxtaposed relationship to each other, with one of said layers forming a center layer,
   a. each layer surrounding said center layer having a width greater than said center layer,
   b. each subsequently stacked layer having a greater width than said previously juxtaposed stacked layer, and
   c. each of said layers comprising a thickness between ¼ of an inch and 1 inch; and

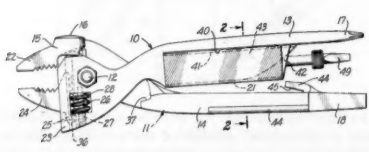
B. a plurality of air pockets being
   a. formed between the edges of the center layer and the greater width surrounding layers and



   b. formed between at least one of the previously stacked layers and the next greater width subsequently stacked layer, wherein said plurality of layers comprise a single elongated sheet of fiber material which is repeatedly folded convulutely around itself in a loose manner, thereby forming the juxtaposed plurality of layers and air pockets,

whereby air is freely and rapidly expelled from and drawn into each of said layers individually by compressive loading and unloading, providing a pillow body which easily compresses and responds to a deformation load and resiliently rebounds upon removal of said deformation load.

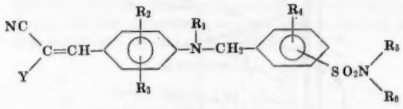
3,858,258
MULTIPLE HAND TOOL
Peter S. Stevens, 708 Strand, Manhattan Beach, Calif. 90266
Continuation-in-part of Ser. No. 266,267, June 26, 1972, Pat. No. 3,798,687. This application Feb. 19, 1974, Ser. No. 443,701
Int. Cl. B25f *1/04*
U.S. Cl. 7—5.1 **6 Claims**



1. A multiple hand tool comprising a pair of elongated members pivotally connected to each other adjacent their upper ends, the lower ends of said elongated members forming a pair of handles, the upper ends of said elongated members carrying a stationary jaw and a laterally movable jaw respectively, means for removably connecting said handles to each other for use of said tool as an adjustable wrench, said elongated members being releasable for pivotal movement for use of said tool as pliers, one of said handles carrying on the inner side thereof a projection, the other of said handles carrying a member mounted thereon for longitudinal sliding movement along said other handle, said member having means for removably receiving said projection, said member adapted upon sliding movement thereof to receive said projection to connect said handles to each other and hold said elongated members in closed position, said projection having a free end directed toward said jaws, said member being slidable outwardly to engage said projection, the surface of said projection engaged by said member extending at a slight angle inwardly toward the handle on which said projection is carried, whereby the sliding engagement between said member and projection acts to pull the ends of said handles remote from said jaws toward each other, said movement acting to tighten the gripping action of said jaws when said jaws are in open position.

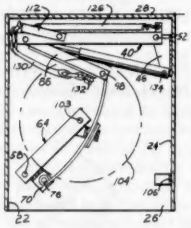
3,858,259
YELLOW METHINE DYES FOR HYDROPHOBIC TEXTILE MATERIAL
Edgar Earl Renfrew, Lock Haven, Pa., and Guido Ruggiero Lorenzo Genta, Snyder, N.Y., assignors to American Aniline Products, Inc., Lock Haven, Pa.
Filed Apr. 28, 1972, Ser. No. 248,483
Int. Cl. D06p *3/52*
U.S. Cl. 8—179 **6 Claims**

1. A polyester textile material dyed with a compound of the formula:



wherein Y is a member selected from the group consisting of cyano, benzyl, carbamoyl, N-lower alkyl carbamoyl, N,N-dilower alkyl carbamoyl, N-phenyl carbamoyl, N-loweralkoxy phenylcarbamoyl, N-loweralkyl phenyl carbamoyl, N-halophenyl carbamoyl, lower carbalkoxy, lower cyanocarbalkoxy, phenyl sulfonyl, halophenyl sulfonyl, and lower alkylphenylsulfonyl; R_1 is a member selected from the group consisting of lower alkyl, hydroxy lower alkyl and cyano lower alkyl; R_2, R_3 and R_4 are members selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, chlorine and bromine, and R_5 and R_6 are members selected from the group consisting of hydrogen, lower alkyl, cyano lower alkyl and hydroxy lower alkyl.

3,858,260
AMPHIBIAN VEHICLE
Paul Edmond Hanser, 2329 33rd St., Moline, Ill. 61265
Filed Feb. 12, 1973, Ser. No. 331,553
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 T **10 Claims**



1. In an amphibian vehicle having a hull, at least one compartment disposed within th hull and opening through the bottom thereof, a wheel movable vertically relative to the compartment between a retracted position disposed in the compartment and an extended position projecting below the hull for engagement with the ground, and an assembly within the compartment and carrying the wheel, the assembly being selectively operable to move the wheel between and maintain the wheel in its projected and extended positions, said assembly being characterized by

A. first and second fixed supports mounted in the compartment in a generally coplanar spaced relation,

B. first and second arms journaled at their inner ends on said first and second supports, respectively, for pivotal movement in a vertical plane between an upper inoperative position and a lower operative position,

C. a pivot carried at the outer end of each of said arms,

D. a link having its end journaled on said pivots, said link

1. maintaining said pivots at a substantially constant center to center distance, and

2. rotating to an angular position relative to and between said arms and wedging between said pivots upon terminal movement of said arms into their operative position to restrain said arms against movement toward their inoperative position under the influence of upward pressure on said wheel,

E. fixed stop means mounted in said compartment spaced from and generally coplanar with said supports, said stop means engaging said first arm and restraining said first arm from movement past its operative position under the influence of said pressure transmitted thereto from said second arm through said wedged link,

F. said arms passing through an intermediate position during their movement between said inoperative and operative positions, said intermediate position being defined by

1. projection of said second arm beyond its operative position, and

2. alignment of the longitudinal axis of said first arm with the longitudinal axis of said link,

G. a lever mounted on said first arm and extending generally transversely thereof when said first arm is in its intermediate position,

H. pressure means acting against said lever in a direction to force said first arm from its intermediate position to its operative position and simultaneously move

1. said second arm from its projected to its operative position, and

2. said link from its aligned to its wedging position, and

I. means selectively operable for rotating said link out of said angularly wedged position and moving said arms simultaneously from their operative position to their inoperative position,

J. said wheel being carried by and movable simultaneously with said second arm between said retracted and extended positions in response to movement of said second arm between its inoperative and operative positions.

3,858,261

PUNCHING TOOL FOR FORMING A CROSS-RECESS OF A SCREW

Iwao Uozumi, 17-11, 7-chome, Ebara, Shinagawa-ku, Tokyo, Japan

Filed June 21, 1973, Ser. No. 372,020
Claims priority, application Japan, June 21, 1972, 47-72639
Int. Cl. B23g *9/00*
U.S. Cl. 10—7 **2 Claims**

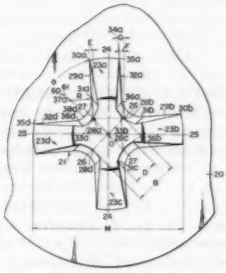
1. In a cross-recessed screw forming punching tool provided with a cone-shaped punching body having four ridges, said ridges radially projecting along main radial axes orthogonally intersecting with each other at the center point of the punching body, the lateral side edges of the ridges having a predetermined positional relationship relative to four reference points which are spaced from adjacent reference points by a first standard spacing and fall on auxiliary radial axes, wherein:

said axiliary axes pass through said center point and intersect the main axes at an angle of 45°;

the radially inner ends of said lateral side edges terminate at pairs of reference lines parallel to and spaced by a second standard spacing from the auxiliary radial axes;

the inner end of the one lateral side edge of each ridge is connected by an intersecting portion with that of the other lateral side edge of the adjacent ridge;

one of the lateral side edges of each ridge extends along a line which diverges at an angle 3°–6° from an associated main radial axis and passes through an associated reference point;



the other lateral side edge of said ridge extends along a line which converges toward the main axis at the same angle as said one lateral side edge and passes through a point nearer to the main axis than an associated reference point; and

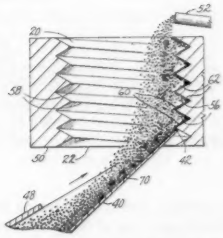
said intersecting portion is formed in a curved concave shape.

3,858,262

METHOD OF MAKING SELF-LOCKING INTERNALLY THREADED ARTICLES

Richard J. Duffy, Salem, Mass., assignor to USM Corporation, Flemington, N.Y.

Continuation-in-part of Ser. No. 314,854, Dec. 13, 1972, abandoned. This application Sept. 25, 1973, Ser. No. 400,502
Int. Cl. B21d *53/24*
U.S. Cl. 10—86 A **8 Claims**



1. The method of making a self-locking internally threaded article including a body of normally hard, tough, resilient thermoplastic resin adhered to the threaded surface comprising the steps of supporting the article with openings at the ends of the threaded portion substantially free, heating the threaded portion to a temperature above the softening point of the resin, providing a stream of fine particles of said resin entrained in a gaseous jet, directing particles of said stream through a first one of said openings toward a selected area of the surface of said threaded portion and in a direction including a component toward the opening at the other end of the nut and guiding said gaseous jet into and through said threaded portion and out through the other of said openings, applying suction adjacent the other of said openings in operative relation for drawing in air through said first opening to reduce deposition of resin particles on undesired areas of said articles, catching resin particles contacting the surface of said threaded portion by softening them and causing them to adhere to said surface by heat from said surface progressively to

build up a deposit of resin on said selected area, fusing adhered particles to a substantially continuous body or resin, and cooling said body of resin to harden it to a solid body resistant to displacement and effective to give a locking action when a complementary threaded member is assembled with said threaded portion.

3,858,263

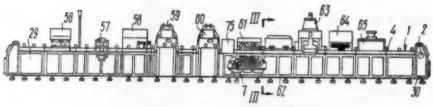
SEMIAUTOMATIC FOOTWEAR PRODUCTION LINE

Mikhail Dmitrievich Smirnov, Moskovsky prospekt, 175, kv. 7; Ivan Demyanovich Sergeev, ulitsa Zamshina, 27, korpus 4, kv. 236; Ilya Iosifovich Brod, prospekt Kosmonavtov, 52, korpus 1, kv. 117; Mikhail Nikolaevich Kharman, prospekt Mechnikova, 14, kv. 77; Leonid Vasilievich Puzynya, prospekt Engelsa, 22, kv. 5; Ikhil Abramovich Veinberg, Ligovsky prospekt, 31, kv. 5; Ekaterina Georgievna Zakharova, Kuznetsovaskaya ulitsa, 30, kv. 50, all of Leningrad; Vladimir Pavlovich Lapshin, Profsojuznaya ulitsa, 32, kv. 178; Valentina Vasilievna Kitaeva, ulitsa Vavilova, 56, korpus 2, kv. 200, both of Moscow; Leonid Alexandrovich Petrov, prospekt Slavy 35, korpus 1, kv. 19, Leningrad; Vladimir Maximovich Kukushkin, prospekt Slavy, 35, korpus 1, kv. 23, Leningrad; Vladimir Nikolaevich Stukalov, ulitsa III Internatsionala, 135, kv. 48, Leningrad; Pavel Mikhailovich Smirnov, prospekt Bolshevikov, 25, kv. 354, Leningrad; Viktor Timofeevich Novokreschenov, Nagornaya ulitsa, 24, Leningradskaya oblast Krasnoe Selo; Eduard Nikolaevich Shushkevich, Grazhdansky prospekt, 89, korpus 2, kv. 24, Leningrad; Anatoly Alexandrovich Atkarsky, Derbenevskaya Naberezhnaya 13/17, korp. 3, kv. 78, Moscow; Boris Davydovich Okun, Kozhevnikovskaya ulitsa, 9, kv. 44, Moscow; Vladimir Zakharovich Karasik, ulitsa Vysokaya, 4, kv. 27, Moscow, and Vera Nikolaevna Khodosova, ulitsa Obukha, 18, kv. 22, Moscow, U.S.S.R.

Filed Sept. 17, 1973, Ser. No. 397,739

Int. Cl. A43d *00/00*

U.S. Cl. 12—1 A **3 Claims**



1. A semiautomatic line for producing foot-wear with the bottom attached by any one of the cementing, directmoulding or valcanizing methods, said line comprising: process machines including working mechanisms, said machines being arranged according to the sequence of flowsheet procedures; an intermittent-action, vertically-closed conveyer including means adapted to feed shoe uppers to the working stations of said process machines; a hydromechanical drive for said conveyer; supports detachably mounted on said conveyer; lasts mounted on said supports and including means adapted for positioning shoe uppers thereon; working mechanisms of said machines; a hydraulic drive being interconnected with said working mechanisms and with said hydromechanical drive of said conveyer; individual control units for each machine; and a device including means adapted to control the operation of the machines in said line, said device being formed essentially of said control units mechanically interconnected and associated with said hydromechanical drive; said semiautomatic line being subdivided into sections; each of said sections incorporating one of said machines with an individual control unit, a portion of said conveyer corresponding to said machine, and ways for mounting said conveyer portion.

3,858,264

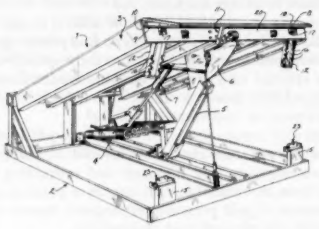
SAFETY LOCK MECHANISM FOR A DOCKBOARD

Robert C. Kuhns, Elm Grove, and Robert D. Metro, Brookfield, both of Wis., assignors to Kelly Company, Inc., Brookfield, Wis.

Filed Nov. 30, 1973, Ser. No. 420,446

Int. Cl. B65g *11/00*

U.S. Cl. 14—71 **8 Claims**



1. In a dockboard having a supporting structure and a ramp structure with the rear end of the ramp structure being hinged to the supporting structure, a lip hinged to the forward edge of the ramp structure and movable between a downwardly hanging pendant position and an outwardly extending position in which the lip forms an extension of the ramp structure, a movable leg mounted for movement on one of said structures between a supporting position and a non-supporting position, a fixed leg connected to the other of said structures and adapted to be engaged by said movable leg when the movable leg is in the supporting position to thereby support the ramp structure at a given inclination, the improvement comprising a safety stop member pivotally connected to the fixed leg and having an obstructing position wherein said stop member prevents movement of the movable leg to the non-supporting position, pivotal means for mounting said stop member for forward pivotal movement from said obstructing position to a non-obstructing position where the stop member will not obstruct movement of said movable leg to the supporting position, and means to bias the stop member rearwardly to the obstructing position, said stop member when in the obstructing position preventing rearward movement of the movable leg to the non-supporting position when the ramp structure is in a generally horizontal dock level position and thereby preventing lowering of the ramp structure, said stop member being disposed to be engaged by the movable leg as the movable leg moves from the non-supporting position toward the supporting position with the ramp structure slightly above dock level, whereby said movable leg pivots the stop member to said non-obstructed position to enable the movable leg to move to the supporting position.

3,858,265

AUTOMATIC BLACKBOARD ERASER

Rolland L. Schlick, 75 Palm St., Attleboro, Mass. 02703

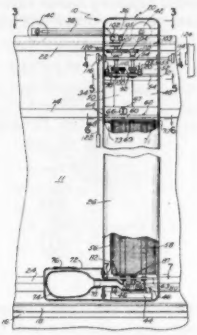
Filed Jan. 15, 1973, Ser. No. 323,437

Int. Cl. A47l *11/38*

U.S. Cl. 15—77 **10 Claims**

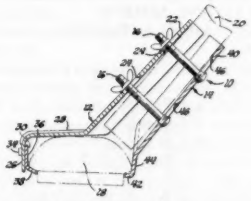
1. A device for automatically erasing a blackboard, comprising an elongated carriage extending at least the vertical dimension of said blackboard and located outwardly thereof in adjacent relation, means for mounting said carriage for movement in a direction that is longitudinal with respect to said blackboard for traversing the length thereof, brush means mounted in said carriage for rotating movement and engaging the surface of said blackboard, the longitudinal axis of said brush means being located parallel to the surface of said blackboard, motor means mounted in said carriage and interconnected to said brush means for producing the rotating movement thereof, a drive assembly adapted to be interconnected to said motor means and including drive means that is

responsive to operation of said motor means for producing the movement of said carriage longitudinally of said blackboard, and for producing concurrent rotation of said brush means, and shiftable means mounted on said carriage for actuating



said motor means and for interconnecting said motor means with said drive means so that said carriage and brush means mounted therein are automatically moved longitudinally of said blackboard from a rest position and are returned to the rest position after traversing the length of said blackboard.

3,858,266
ADJUSTABLE BROOM BLOCK CLAMP
Paul P. Thomas, Bryan, Ohio, assignor to Winzeler Spamping Co., Montpelier, Ohio
Filed Mar. 19, 1973, Ser. No. 342,328
Int. Cl. B25g *3/24*
U.S. Cl. 15—146 **16 Claims**



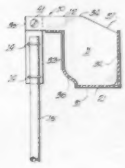
1. An adjustable clamp assembly for securing a broom block to a handle member comprising: an upper clamp member having a depending portion, a lower clamp member, fastener members connecting said upper and lower clamp members, a flange extension member carried by said depending portion, an adjustment means for positioning said flange member at fixed predetermined positions relative to said upper clamp member, said adjustment means including a plurality of apertures defining at least two spaced positions and tab members for selective mechancial interlocking engagement with said apertures in one of said positions.

3,858,267
GUTTER CLEANING TOOL
Arthur Swannie, 241 Roslyn St., Buffalo, N.Y. 14215
Filed Dec. 21, 1973, Ser. No. 427,054
Int. Cl. E04d *13/06*
U.S. Cl. 15—236 R **3 Claims**

1. A tool for the cleaning of debris from elevated household gutters and adapted to be manipulated by a person standing on the ground below the gutter, the tool comprising:

a substantially flat generally rectangularly shaped blade member having a bottom edge, a top edge, and opposed side edges, said bottom edge being contoured to fit the interior bottom surface of the gutter to be cleaned, said top edge adjacent the side edge of said tool adapted to engage the side of the gutter nearest the house being inclined downwardly from said top edge to said side edge to provide clearance for roof overhang so as to not interfere with the operation of the blade;

an arm member formed integrally with said blade and projecting outwardly substantially at right angles to the length of the blade from the side edge of said blade opposite the side edge adapted to be disposed nearest the house, said arm forming a substantial extension of said



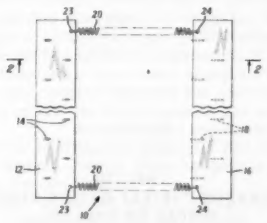
blade top edge and adapted to engage a horizontal extension of the gutter;

a substantially flat rectangularly shaped bracket member having one end pivotally connected to said projecting end of said arm member with said opposite end projecting outwardly therefrom and movable in a swinging plane thereabout which is substantially parallel to the plane of said blade member;

an elongated rod like member having one end adapted to be affixed to said bracket member and having the opposite end projecting away from said bracket member and adapted to be grasped in the hands of the person standing on the ground; and

means detachably attaching said rod member to said bracket member.

3,858,268
RUG HOLDER
Joseph J. Pollak, 132 Glen Ave., Scotia, N.Y. 12302
Filed Oct. 19, 1973, Ser. No. 407,921
Int. Cl. A47g *27/04*
U.S. Cl. 16—8 **4 Claims**



1. A device for removably securing a rug to an underlying carpet to inhibit relative movement between the rug and the carpet which comprises, in combination, a first substantiall flat elongated member having pins extending from a face thereof adapted to engage the superposed rug, a second substantially flat elongated member having pins extending from a face thereof adapted to engage the underlying carpet, said first member and said second member being in generally co-planar

relationship, and elastic means interconnecting the end portions of said first and second members in said generally coplanar relationship with the pins of the first member extending upwardly and the pins of the second member extending downwardly when the two members are horizontally disposed.

3,858,269

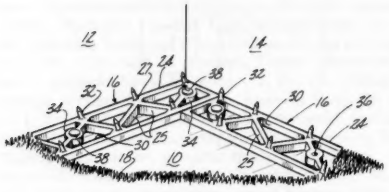
TACKLESS CARPET STRIPPING

Lawrence R. Sutton, Detroit; Carl P. Ranno, Grosse Pointe Park, and Kenneth E. Hewson, Farmington, all of Mich., assignors to Performance Industries, Inc., Pontiac, Mich.

Continuation-in-part of Ser. No. 271,376, July 13, 1972. This application Mar. 22, 1973, Ser. No. 343,649

Int. Cl. A47g *27/04*

U.S. Cl. 16—16 **5 Claims**



1. A tackless carpet stripping for attaching carpeting to a floor in a room wherein the stripping is fastened to the floor along the peripheral edges thereof and adjacent the walls of said room, said stripping comprising:

a one piece molded plastic elongated member of a predetermined length, a lower surface thereof being positioned on said floor along said peripheral edge, said member having longitudinal side walls connected by a plurality of cross members, said cross members being inclined with respect to the longitudinal axis of said stripping and adjacent pairs of cross members define an aperture thereinbetween; a selected number of said cross members having enlarged sections formed at the midsection of said cross members at evenly spaced intervals along with the entire length of said elongated member, said sections each having a bore through which a fastening means extends for fastening said elongated member to said floor; and

a plurality of longitudinally spaced, sharp-ended, inclined holding members carried on the upper surface of said elongated member and projecting therefrom at an angle inclined with respect to said upper surface, said holding members projecting toward said adjacent wall when said stripping is fastened to said floor, said holding members being formed as one-piece projections of said elongated member and adapted to engage said carpeting, said holding members being regularly spaced along the upper surface of said elongated member and successively positioned on opposite sides of said upper surface along the length thereof, said elongated member being constructed such that said elongated members may be easily broken to provide shorter lengths thereof.

3,858,270

REFRIGERATOR CABINET HAVING ADJUSTABLE WHEEL OR ROLLER

William P. Crowe, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 9, 1973, Ser. No. 414,143

Int. Cl. B60b *33/04*

U.S. Cl. 16—19 **2 Claims**

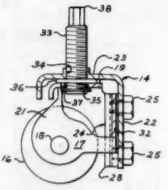
1. A refrigerator cabinet, comprising:

a frame member having first and second portions and extending across the front of said cabinet adjacent the bottom thereof, said first portion being oriented generally vertically and said second portion being oriented generally horizontally;

a wheel housing supported on said frame member second portion adjacent each end thereof;

a wheel rotatably mounted on each wheel housing;

a pair of rotatable adjusting means each supported by said frame member second portion and connected to one of said wheel housings;



a pair of frame flange sets each connected to the frame member first portion adjacent one of the wheel housings, each frame set comprising a pair of opposed flanges each extending along and being spaced from the frame member first portion for forming a pair of spaced, generally vertical tracks; and

a housing flange set connected to each wheel housing, each housing flange set comprising a pair of opposed flanges oriented relative to a respective frame flange set for disposition in said tracks.

3,858,271

FLOOR-ENGAGING MOBILE SUPPORT DEVICES FOR ARTICLES OF FURNITURE OR THE LIKE

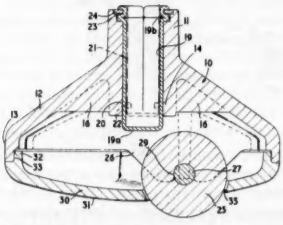
Bernard Peter Fox Howard, and Ronald David Carter, both of 19 Church St., Warwick, Warwickshire, England

Filed Nov. 20, 1972, Ser. No. 307,897

Claims priority, application Great Britain, Nov. 19, 1971, 53822/71; July 13, 1972, 32755/72

Int. Cl. A47b *91/00*

U.S. Cl. 16—45 **11 Claims**



1. A floor-engaging mobile support device for articles of furniture and the like, said device comprising:

a. a housing including a body portion and a bottom cap portion,

b. means for pivotally mounting the housing so as to swivel about a vertical axis,

c. said bottom cap portion extending over the uperside of the body portion and having an outer structural surface configuration effective to provide a gliding facility,

d. a first load transmitting abutment means located in the body portion and including boss formations extending downwardly and providing supporting surfaces, and

e. second load transmitting abutment means located in the bottom cap portion to be in confronting load bearing contact with said first load transmitting abutment means,

f. said second load transmitting abutment means including means to receive the boss formations,

g. said boss receiving means including confronting surfaces that contact said supporting surfaces,

h. the body and bottom cap portions having inner surface configurations effective to form an interior cavity within said housing.

3,858,272

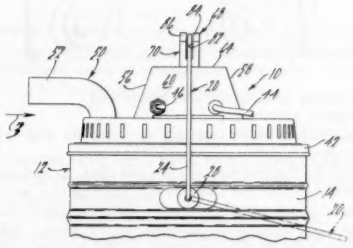
VACUUM ASSEMBLY

Douglas C. Bard, and Elmer H. Bard, both of Muskegon, Mich., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Feb. 21, 1973, Ser. No. 334,458

Int. Cl. B25g *1/04*

U.S. Cl. 16—115 **19 Claims**



1. In combination in a vacuum assembly, an open upper-ended container having a first manually engageable handle thereon,

a vacuum subassembly including a housing having an inlet and an outlet,

an electrically energized vacuum motor within said subassembly, and

a second manually engageable handle on said subassembly, said subassembly being supportable adjacent the upper end of said container and define with the container a discharge chamber communicable with said outlet,

said first and second handles being movable to a position wherein they are generally aligned with each other when said subassembly is assembled onto said container, whereby said first and second handles may be concomitantly manually grasped in order to transport said assembly.

3,858,273

CORRUGATED PAPERBOARD COMPOSITIONS

Herman B. Goldstein, Cranston, and John T. Ouderkirk, Westerly, both of R.I., assignors to Sun Chemical Corporation, New York, N.Y.

Filed May 11, 1971, Ser. No. 142,341

Int. Cl. B32b *3/28*

U.S. Cl. 161—133 **3 Claims**

1. In a rigid-when-wet corrugated paperboard article comprising impregnated corrugating medium between inner and outer linerboards, the improvement which comprises corrugating medium impregnated with dimethylol dihydroxyethylene urea, partially methylated dimethylol dihydroxyethylene urea, or methylated dimethylol dihydroxyethylene urea as the sole essential impregnant, the corrugating medium containing about 2 to 10 per cent of resin solids based on the weight of the medium, in the presence of a catalyst in the amount of about 1 to 50 per cent based on the weight of the resin solids in the medium.

3,858,274

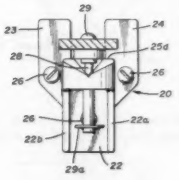
SELF-CENTERING CAFE DOOR HINGE ASSEMBLY

John C. Burton, Seville, and Eugene P. Hayton, Medina, both of Ohio, assignors to Questor Corporation, Toledo, Ohio

Filed Sept. 28, 1973, Ser. No. 401,704

Int. Cl. E05f *1/06*

U.S. Cl. 16—153 **3 Claims**



1. A hinge assembly for interconnecting cafe-type doors to a supporting surface, comprising:

A. an upper hinge assembly including

1. an L-shaped mounting bracket, one leg of which is adapted to be secured to said supporting surface and

2. a hinge pin interconnecting said door and the remaining leg of said mounting bracket

3. said hinge pin being freely pivotable about its longitudinal axis and movable linearly along said axis;

B. a lower hinge assembly including

1. an L-shaped mounting bracket, a first leg of which is adapted to be secured to said supporting surface and

2. a hinge pin interconnecting said door and the remaining leg of said mounting bracket and

3. said hinge pin being freely pivotable about its longitudinal axis and movable linearly along said axis

4. said remaining leg including an enlarged body portion having opposed cam surfaces carried thereon and terminating in opposed flattened horizontal surfaces on said body portion; and

C. unitary lifting and centering means including a cam follower depending therefrom and being

1. secured to said door for movement therewith and

2. interconnected with said mounting bracket by said hinge pin with

3. said cam follower cooperating with said cam surfaces to move said door pivotally in a horizontal plane and linearly in a vertical plane and with said flattened horizontal surfaces to hold said door in an open position.

3,858,275

METHOD OF DISPERSING TIGHTLY BALED FIBERS

Mickey A. Thomas, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 281,861, Aug. 18, 1972,. This application July 9, 1973, Ser. No. 377,370

Int. Cl. D01g *5/00*

U.S. Cl. 19—65 R **1 Claim**

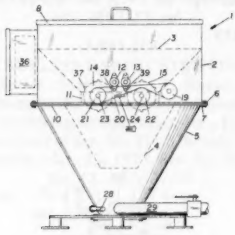
1. A method of substantially separating entangled fibrous material into substantially unentangled fibers, comprising the steps of:

1. introducing said fibrous material into a dispersal zone;

2. intimately contacting said fibrous material in said dispersal zone with a high velocity stream of gas moving in a substantially rotative path to separate said fibrous mate-

rial into fibers;

3. applying a vacuum to said fibers to remove said fibers



downwardly from said dispersal zone; and

4. discharging said fibers through an eductor zone.

3,858,276

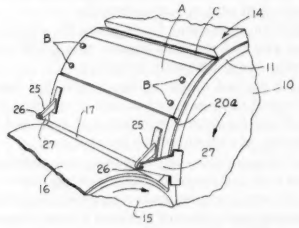
APPARATUS FOR REMOVING TRASH FROM CARDED FIBERS

John D. Hollingsworth, P.O. Box 516, Greenville, S.C.

Filed Aug. 27, 1973, Ser. No. 391,750

Int. Cl. D01g *15/32*

U.S. Cl. 19—98 **2 Claims**



1. In a carding machine having a main cylinder, means feeding fibers to said main cylinder, and stationary plate means carried in superposed fixed spaced relation to the card clothing on the main cylinder having card clothing in carding relation to card clothing on the main cylinder, apparatus for removing trash from carded fibers prior to delivery of the carded fibers to a doffer comprising:

A. a plate portion conforming generally to the card clothing on the main cylinder;

B. means positioning said plate portion in superposed fixed spaced relation to the card clothing on the main cylinder;

C. an edge of the plate portion beveled rearwardly and upwardly forming a sharpened lower edge facing in a direction opposite to the direction of rotation of the main cylinder;

D. said stationary plate means having an edge opposite said sharpened lower edge;

E. means positioning said sharpened lower edge below said opposite edge and in spaced relation thereto; and

F. said sharpened lower edge and said opposite edge defining a passageway permitting removal of trash therethrough at least partially responsive to centrifugal force imparted to the trash by the main cylinder but retaining the fibers for delivery to the doffer;

whereby a substantial portion of the trash is removed while fibers are retained for delivery by the main cylinder to the doffer.

3,858,277

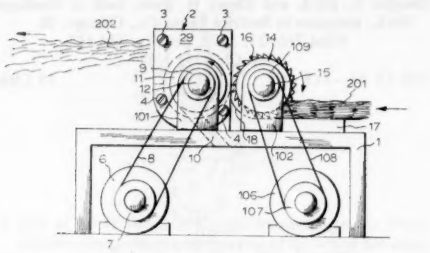
SPIRAL CARDING APPARATUS

Roger S. Brown, New Orleans, and Philip L. Rhodes, Chalmette, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 26, 1973, Ser. No. 410,150

Int. Cl. D01g *15/18, 15/20*

U.S. Cl. 19—99 **3 Claims**



1. In a spiral carding machine comprising

a. a support member;

b. a carding cylinder rotatably mounted on said support member;

c. means for feeding partially opened fibers to said carding cylinder comprising a worker roll and a narrow feed plate located at one end of both said cylinder and said roll, said feed plate tangentially adjacent to the worker roll and with its nose in close proximity to the periphery of said carding cylinder, said worker roll and carding cylinder having parallel axes;

d. a cover enclosing said carding cylinder and having a plurality of channels on the inner surface thereof positioned at an angle to the axis of said carding cylinder and capable of coacting with said cylinder to cause said fibers to follow a spiral path from the feed plate at one end of the carding cylinder to a discharge aperture in the cover adjacent to the other end of said carding cylinder;

the improvement wherein:

said worker roll tapers axially, with the small end thereof adjacent to said feed plate.

3,858,278

APPARATUS FOR DRAFTING LONG STAPLE FIBRE SLIVERS

Ludwig Schmitt, Manching, and Joachim Kipping, Ingolstadt, both of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Continuation of Ser. No. 141,519, May 10, 1971, abandoned. This application Feb. 28, 1973, Ser. No. 337,750

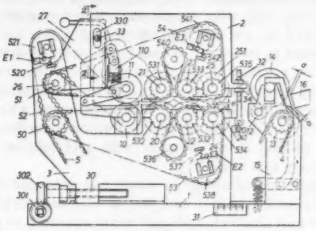
Claims priority, application Germany, May 23, 1970, 2025272

Int. Cl. D01h *5/74*

U.S. Cl. 19—260 **1 Claim**

1. In apparatus for drafting long staple fibre slivers and having a drafting zone including a plurality of pairs of cooperating upper and lower rollers in the drafting zone having needlelike projections projecting from the peripheral surface thereof for guiding the fibres, the projections of one roller of each cooperating pair interfitting between the projections of its cooperating roller and mounting means carrying the upper rollers of the pairs, the improvement comprising means for moving the mounting means to adjust the upper rollers elevationally relative to the lower rollers including first pivot means located at a first side of the plurality of rollers pairs, first adjustable means located at a second side of the plurality of roller pairs for swinging the mounting means about said first pivot means, such second side being opposite such first side, second pivot means located at such second side of the plurality of rollers and second adjustable means included in said first

pivot means and operable independently of said first adjustable means located at such first side of the plurality of roller pairs for swinging the mounting means about said second pivot means, said first and second adjusting means thereby being



operable for setting the upper rollers in a selected adjusted relationship to the lower rollers and thereby establishing a predetermined depth of penetration of the roller projections according to the sliver being processed.

3,858,279

TIGHTENING AND SECURING DEVICE FOR STRAPPING

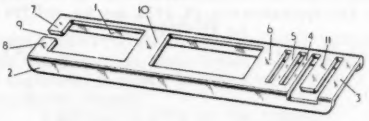
Lars Erik Brattstrom, Lund, Sweden, assignor to Spanset Inter A.G., Basle, Switzerland

Filed Jan. 29, 1974, Ser. No. 437,561

Claims priority, application Great Britain, Feb. 27, 1973, 9682/73

Int. Cl. A44b *21/00*

U.S. Cl. 24—68 F **9 Claims**



1. A device for tightening and securing together two end portions of strapping, comprising a pair of longitudinal side members interconnected in spaced parallel relationship, an arm adjacent one end of the device attached at its one end to one of the side members and having its other free end disposed adjacent the other side member so as to be engageable by a looped one end portion of the strapping, a first cross-member interconnecting said side members at that side of said arm adjacent said one end of the device, a pair of second cross-members interconnecting said side members at that side of said arm remote from said one end of the device and engageable by the other end portion of the strapping, and a pair of projections extending in opposed relationship from respective side members to define a gap at or adjacent the other end of the device, whereby in use, upon reversal of the position of the device the two end portions of the strapping are brought together and overlapped to tension the strapping and secure the two end portions together.

3,858,280

FASTENING CLIP

Martin A. J. Martens, Peabody, Mass., assignor to I. D. Engineering, Inc., Peabody, Mass.

Filed Nov. 17, 1972, Ser. No. 307,366

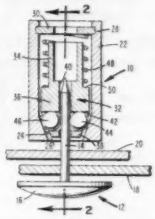
Int. Cl. A44b *9/00, 1/38*

U.S. Cl. 24—150 R **4 Claims**

1. A fastening clip for securing two or more articles together comprising:

a. a generally cylindrical housing the inner wall at one end of which is tapered to form a conical bore at such one end thereof,

b. a retainer loosely received entirely within said housing, said retainer including an upper portion of reduced outer diameter, a central cylindrical section having a diameter slightly less than the inside diameter of said housing so as to guide said retainer during movement thereof, and a lower section formed with a conical exterior surface adapted to mate with said tapered wall of said housing, an axial bore extending entirely through said retainer, and at least one transverse opening formed in said lower section of said retainer, said opening being of relatively greater dimension than said axial opening,



c. a plurality of retaining balls positioned in said transverse opening and adapted to engage said tapered wall and intersect said axial bore,

d. spring means disposed around said upper portion of said retainer for resiliently biasing said retainer toward said tapered wall of said housing thereby biasing said balls toward said axial bore, and

e. pin means extending upwardly into said axial bore and tightly frictionally engaged by said retaining balls, any attempted withdrawal of said pin from said retainer serving to increase the frictional force on said pin exerted by said balls.

3,858,281

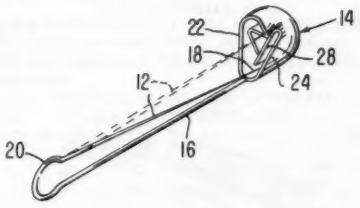
ATTACHMENT DEVICE

Carl T. Larson, P.O. Box 54, Richmond, Calif.

Continuation-in-part of Ser. No. 77,164, Oct. 1, 1970, abandoned. This application Dec. 20, 1972, Ser. No. 316,959

Int. Cl. A44b *9/12*

U.S. Cl. 24—156 R **5 Claims**



1. An attachment device comprising: an elongated member; a head having a pair of inwardly turned oppositely engaging sides and a passage thereinto between the sides for receiving one end of the member, said passage having an entrance; means coupling the member with the head and for permitting said one end of the member to move into and out of the head through said passage; and one of said sides including integral spring means spaced therefrom extending into said head and between said sides for yieldably closing the passage; said spring means being disposed to guide said one end toward and away from said entrance and being movable in a direction to open the passage and allow said one end of the member to be

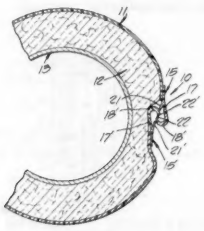
received within the head when said one end engages said closing means.

3,858,282

SELF-LOCKING SEPARABLE SEAM ASSEMBLY

Walter A. Plummer, 3546 Crownridge Dr., Sherman Oaks, Calif.

Filed Dec. 5, 1973, Ser. No. 421,847
Int. Cl. A44b *17/00*
U.S. Cl. 24—201 C **9 Claims**



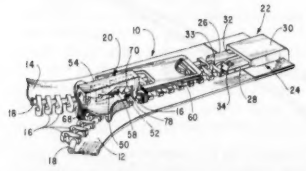
1. An interlocked self-locking separable seam assembly comprising a pair of generally J-shaped semi-rigid continuous strips of identical cross-section extruded from plastic material and including a trough-shaped portion integral with a stem portion, said trough-shaped portion having a free lip edge extending therealong, a semi-rigid deflectable locking rib integral with said stem portion and extending lengthwise of said strip with the free edge thereof extending toward and closely spaced from the lip edge of said trough-shaped portion, said locking rib being so positioned as to require deflection toward said stem portion as said trough-shaped portions of said strips are overlapped and pressed into interlocking engagement with one another, and the free edges of said locking ribs then resuming the initial unstressed position thereof and cooperating with the juxtaposed exterior surfaces of said cup-shaped portions to resist separation of said interlocked strips.

3,858,283

SEPARABLE SLIDE FASTENER

George W. Runnels, Meadville, Pa., assignor to Textron Inc., Providence, R.I.

Filed July 26, 1973, Ser. No. 382,985
Int. Cl. A44b *19/36, 19/30*
U.S. Cl. 24—205.11 R **6 Claims**



1. A separable slide fastener comprising a pair of tapes carrying interengaging elements along inner edges thereof;

a slider movable along interengaging elements to control opening and closing of said slide fastener and including a body formed of a pair of flanged wings defining a Y-shaped channel for guiding said interengaging elements through said slider, one of said wings having a slot formed therein laterally spaced from the longitudinal center of said slider, a housing pivotally mounted on said one wing and having a tang depending therefrom and aligned with said slot to be received therein to define a movable locking prong extending within said channel at a position laterally spaced from the longitudinal center of said slider, and a pull having an end engaging said housing to pivot said housing and move said locking prong out of said channel when force is applied to said pull;

separating end stop means including an insert member secured to one of said tapes, and a retainer member secured to the other of said tapes, said retainer member having a detent notch therein for receiving said locking prong when said slider is moved to an assembly position adjacent said separating end stop means whereby said slider is held in said assembly position to facilitate assembly of said insert member with said retainer member through said slider;

said slider including spring means engaging said housing to move said tang into said slot to bias said locking prong into said channel, said pull being operable to pivot said housing against said spring means to move said locking prong out of said channel; and

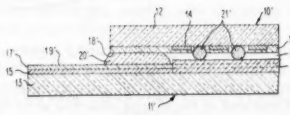
said slider including a pair of spaced block means on the front of said one wing having oppositely disposed inclined surfaces, said housing including a pair of side walls having notches therein aligned with said inclined surfaces, and said end of said pull extending through said notches to be movable along said inclined surfaces to abut said side walls and pivot said housing when force is applied to said pull.

3,858,284

METHOD OF SPACING THE PLATES OF A GASEOUS DISCHARGE DEVICE

Michael J. Costa, Poughkeepsie; James C. Greeson, Jr., and Peter H. Haberland, both of Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 251,483, May 8, 1972, Pat. No. 3,808,497.
This application Oct. 18, 1973, Ser. No. 407,770
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.13 **4 Claims**



1. A method of sealing flat surfaces of two members in overlying relation at a precise preselected distance to create an impermeable chamber of constant height divided into areas by spacer elements that do not significantly impede flow of gas between such areas in the chamber, comprising the steps of

providing two substantially transparent flat members, each said member having parallel conductors overcoated with a thin layer of dielectric material,

placing on one of the members a border of unfused heat-fusible material having a height significantly greater than said constant height,

placing spacer elements of substantially identical thickness in a two-stratum crisscross pattern within said border to a combined height significantly less than the minimum height of said material,

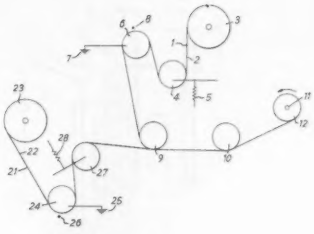
placing the other member with its flat surface supported on said heat-fusible material, and

heating such assemblage to a temperature above the softening point of said sealing material but below the softening point of the spacer elements to effect fusion of said material and members to create said chamber as, and in consequence of, said other member settling during such heating and fusing until it is supported at said constant height by said crisscrossed arrangement of spacer elements.

3,858,285
CAPACITOR WINDING

Colin Williams, Biggleswade, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 5, 1972, Ser. No. 312,275
Claims priority, application Great Britain, Dec. 22, 1971, 59594/71; Feb. 3, 1972, 5106/72
Int. Cl. H01g 13/00
U.S. Cl. 29—25.42 11 Claims

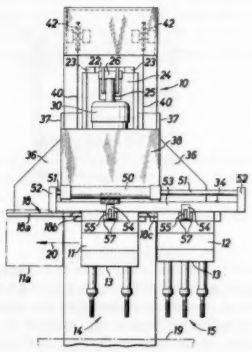


1. A method of forming a wound electrical capacitor containing a plurality of windings, said windings including at least a pair of electrically conductive electrode films spaced apart by a synthetic polymeric dielectric film, comprising depositing an electrostatic charge on a surface of the dielectric film, and winding the electrostatically charged film together with the other film windings of the capacitor at a linear speed of at least 1.5 metres per second, the magnitude of the deposited electrostatic charge being such that a wound capacitor having substantially planar end faces is formed as a result of prevention of transverse slippage of the films relative to each other during winding.

3,858,286
TOOL CARRYING HEAD FOR MACHINE TOOLS

Antonin Nohejl, Surbiton, Great Britain, assignor to The Mollart Engineering Company, Limited, Kingston By-Pass, Surbiton, Surrey, England

Filed Oct. 18, 1972, Ser. No. 298,653
Int. Cl. B23b 39/16
U.S. Cl. 29—26 A 8 Claims

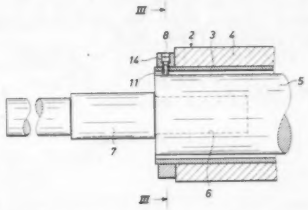


1. A machine tool having at least two tool carrying units each unit having at least one machining tool thereon, said units being slidably mounted on a guide rail extending across the machine in a substantially horizontal plane, said units being each selectively movable along said guide rail from a first inoperative position in which tools may be removed therefrom or placed therein, to a second operative position in which the chosen one of said units is engagable by a first actuating device for moving said chosen unit downwardly in a vertical plane into a machining position, said actuating device having means for driving said at least one tool on said chosen unit for performing machining operations, wherein the guide rail is formed in three sections, the outer two sections being rigidly fixed in stationary relationship to the structure of the machine so as to provide an inoperative position at each side thereof for receiving one or the other of the tool carrying units, and the central section providing said operative position and being movable downwardly with the chosen unit into the machining position, said outer two sections remaining in their stationary relationship to the structure of the machine when the central section is moved downwardly with the chosen unit.

3,858,287
IMPRESSION CYLINDER

Albert B. Christoffersen, H.J. Holstvej 26, 2610 Rodovre, Denmark

Filed Mar. 6, 1973, Ser. No. 338,556
Claims priority, application Denmark, Mar. 6, 1972, 1029/72
Int. Cl. B21b 31/08
U.S. Cl. 29—132 9 Claims

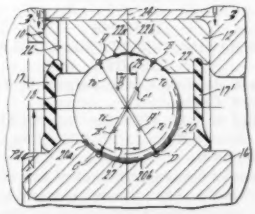


1. A printing cylinder for printing machines, particularly flexo-printing machines and indirect photogravure printing machines, comprising a block-supporting sleeve mounted on a circular shaft wherein one end of the sleeve is provided with adjusting means which is in engagement with the shaft the sleeve is mounted with such clearance on the shaft that during rotation, the shaft cannot come into contact with the internal surface of the sleeve, said adjusting means consisting of an uneven number of adjustable fastening means, said fastening means being adapted for adjustment of the center line of the sleeve relative to the center line of the shaft.

3,858,288
METHOD OF MAKING A BALL BEARING ASSEMBLY

Eli M. Ladin, Ann Arbor, Mich., and Paul D. Green, Shelbyville, Ind., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Nov. 12, 1973, Ser. No. 414,787
Int. Cl. B23p 11/00, 17/00
U.S. Cl. 29—148.4 A 24 Claims



1. The method of amking a bearing of the type adapted to support a rotating load for rotation about the axis of the bear-

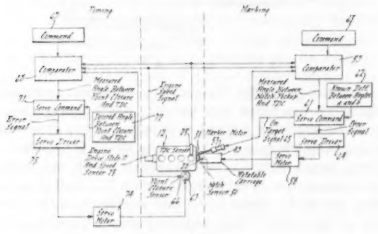
ing and comprising an annular outer bearing member coaxially disposed around the axis of the bearing, said outer bearing member comprising a radially inwardly facing annular raceway extending around the inside thereof, an inner bearing member coaxial with and circumferentially encompassed by said outer bearing member, said inner bearing member comprising a radially outwardly facing annular raceway extending around the outside therof and a plurality of bearing elements confined between said two members and riding in the raceways thereof, said method comprising the steps of forming a radial passage through said outer bearing member, forming a crack line through said outer bearing member to intersect said passage and split the outer member into a circumferentially discontinuous element having opposed ends terminating at the crack line, separating said ends of said outer member, assembling said bearing elements into the bearing raceways while said ends of said outer member are separated, and returning said outer member to its initial shape so that the bearing elements are retained in the bearing raceways between the two bearing members.

3,858,289

METHOD AND MEANS FOR AUTOMATICALLY MARKING TIMING INDICIA ON VEHICLE ENGINES

James T. Westervelt, Rochester; Philip E. Swis, Mt. Clemens, and Glenn M. Brown, Royal Oak, all of Mich., assignors to The Cross Company, Fraser, Mich.

Filed Nov. 12, 1973, Ser. No. 414,802
Int. Cl. B23p *15/00, 23/00*
U.S. Cl. 29—156.4 R **14 Claims**



1. A method for marking radial timing indicia on vehicle engine blocks comprising the steps of preforming a timing mark on the engine pulley, providing means on the pulley a first known angular distance *a* from said mark for actuating a sensor, mounting said sensor and an engine block marking tool on a common carriage spaced apart by a second known angular distance *b*, rotating the crankshaft, measuring the angular distance between the arrival of said actuating means at said sensor and TDC of Cylinder No. 1, angularly adjusting said carriage until said angular distance is equal to the difference between angles *a* and *b*, and then causing the marking tool to form radial indicia on the engine block.

3,858,290

METHOD OF MAKING INSERTS FOR COOLED TURBINE BLADES

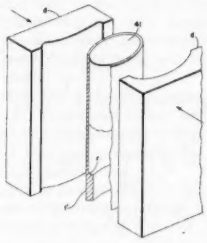
Peter E. Albani, Hamden, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 21, 1972, Ser. No. 308,513
Int. Cl. B23p *15/02;* **B21k** *3/04*
U.S. Cl. 29—156.8 H **5 Claims**

1. The method of forming a thin walled insert for incorporation in an air cooled hollow turbine blade, said blade comprising an integral air foil projecting from a tang for mounting said blade to a rotor, comprising the steps of

selectively removing material from the inner diameter of the upper portion of a length of tubing to define a desired wall thinness in the upper portion and a relatively thick portion at the lower end thereof

collapsing said tubular element to an air foil configuration by pressure exerted normal to the axis of the tube wherein the interior of said thick walled portions are in closely spaced contiguous relationship and said thin walled upper portions are spaced, said thin walled upper portion generally conforming to the interior configuration of a portion of said hollow turbine blade but being dimensioned smaller than said portion, said thick walled portions extending into said tang; and



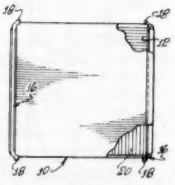
forming a retainer receiving surface through the thick walled lower portion, said retainer receiving surface being connectable to said tang to provide the primary retaining means between said turbine blade and said insert.

3,858,291

METHOD OF MOUNTING A HEAT EXCHANGER CORE

Robert C. Perpall, Palos Verdes Peninsula, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 222,125, Jan. 31, 1972, Pat. No. 3,775,972. This application May 18, 1973, Ser. No. 362,995
Int. Cl. B21d *53/02;* **B23p** *15/26*
U.S. Cl. 29—157.3 R **4 Claims**



1. A method of mounting a heat exchanger core, having opposed inlet and outlet faces, between an inlet duct and an outlet duct, said method comprising the steps of:

providing a first resilient gasket around the periphery of the inlet face of the heat exchanger core and a second resilient gasket around the periphery of the opposed outlet face of the heat exchanger core;

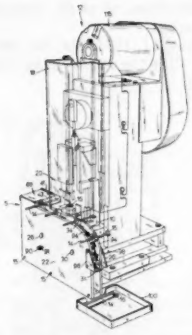
disposing the heat exchanger core with the resilient gaskets between an inlet duct and an

structurally joining the inlet duct to the outlet duct around the heat exchanger core to at least partially compress the resilient gaskets between the inlet and outlet ducts and the opposed inlet and outlet faces respectively.

3,858,292
ENDLESS CHAIN CONVEYOR FOR A TERMINAL APPLICATOR

Ragnar Gudmestad, West Allis, Wis., assignor to Artos Engineering Company, New Berlin, Wis.

Filed Jan. 21, 1974, Ser. No. 434,786
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 DT **13 Claims**



1. A conveyor system for transporting electrical wire leads from a load position to a terminal applicator press having a terminal applicator enclosed within a safety shield, said system comprising: a pair of support plates mounted on the applicator press, a drive sprocket and a driven sprocket mounted for rotary motion on said support plates, an endless chain mounted on said sprocket wheels for movement under said shield, said chain including successive pairs of links thereof swingably interconnected by pivot joints, a number of clamp assemblies mounted on alternate pairs of links on said chain, means for intermittently driving said drive sprocket to move said clamp assemblies in one step from the load position into alignment with the terminal applicator in the applicator press, means at the load position for opening said clamp assemblies to receive an electric wire lead, and means on one of said sprockets for actuating the applicator press at the end of each step of motion.

3,858,293
ASSEMBLY DEVICE

David Frederick Weston, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 27, 1973, Ser. No. 392,004
Claims priority, application Great Britain, Oct. 26, 1972, 49463/72
Int. Cl. B23g *7/10*
U.S. Cl. 29—211 R **4 Claims**

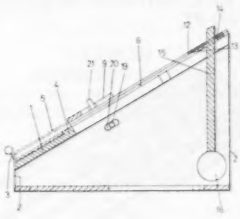
1. An assembly device for assembling the components of a wound clip applicator of the type consisting of a housing for clips and forceps arms provided with locking means for retaining the clips in the housing, the said housing being closed at its base and requiring to be loaded through its upper open end with biassing means and a stack of clips, comprising,

a. a support for receiving the housing of an applicator,

b. a guideway located relative to said support for directing the biassing means and the stack of clips, when placed therein, towards the open end of the housing under gravity,

and

c. a plunger, slidable along said guideway for pressing a stack of clips and biassing means into said housing and

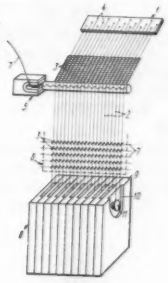


retaining them in said housing while the forceps arms of said applicator are locked.

3,858,294
DEVICE FOR MAKING MEMORY STORAGE MATRICES

Jury Alexandrovich Burkin, Tsvetnoi proezd 29, kv. 24, and Jury Emelyanovich Seleznev, Vesenny proezd 4a, kv. 16, both of Novosibirsk, U.S.S.R.

Filed Aug. 15, 1973, Ser. No. 388,414
Claims priority, application U.S.S.R., Dec. 11, 1972, 1858162
Int. Cl. H01f *7/06*
U.S. Cl. 29—203 MM **1 Claim**



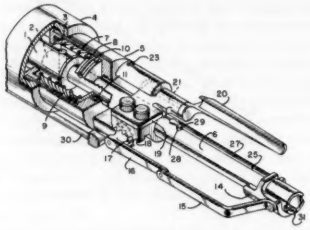
1. A device for making memory storage matrices of the type wherein a plurality of Y axis drive wires are disposed in spaced apart relationship and include memory cores strung thereon, and wherein a plurality of X axis drive wires are threaded through said cores in a direction generally perpendicular to the Y axis drive wires, said device comprising: an upper terminal plate incorporating a plurality of spaced terminal means to which the respective ends of the plurality of Y axis drive wires are adapted to be connected; a plurality of weights disposed beneath said upper terminal plate, each weight having upper and lower edges and a thickness equal to twice the spacing of said terminal means on said terminal plate, a recess being provided in proximity to said upper edge of each weight, and a pully being disposed in each recess, whereby each Y axis drive wire can be looped around the pully in a respective weight to form an adjacent pair of wires in the matrix and thereby pulled taut by the weight; and a means for threading the memory storage matrix with X axis drive wires.

3,858,295

WIRE WRAPPING TOOL

Edward L. Allen, Athens, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Oct. 9, 1973, Ser. No. 404,264
Int. Cl. H01r *43/04;* **H05k** *13/04*
U.S. Cl. 29—203 DT **12 Claims**



1. A tool for cutting and stripping an insulated wire and for wrapping a portion thereof on a terminal comprising:

a motor, a rotatable side load wrapping bit operably connected to said motor at one end, said bit having a first recess formed in its other end for receiving a terminal, and a second recess extending from said other end along its periphery for receiving a wire;

a reciprocating sleeve co-axially mounted on said bit, said bit and said sleeve co-operating to capture an insulated wire;

means for initiating the severance of wire insulation as the wire is captured; and

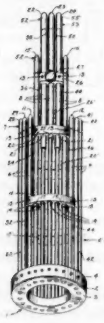
means independent of said sleeve for retaining said severed insulation within said second recess as the wire is withdrawn therefrom and wrapped on a terminal.

3,858,296

COIL PROCESSING APPARATUS

John C. Gage, Mt. Sterling, Ky., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Jan. 24, 1974, Ser. No. 436,041
Int. Cl. H02k *15/06*
U.S. Cl. 29—205 D **23 Claims**



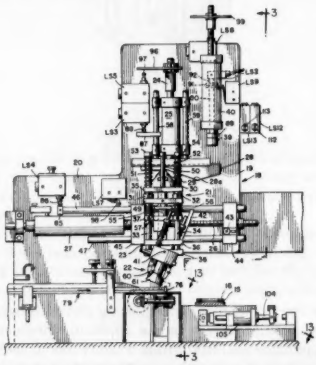
1. An apparatus for processing spaced coils of wire retained on a coil holding means to be used in a dynamoelectric machine, comprising a coil transferring means for removing said coils from said holding means and including a first coil retaining means fixedly connected to a supporting member for receiving a first coil and a second coil retaining means movably connected to said supporting member for movement between retracted and extended positions for receiving a second coil, said supporting member removably positioned adjacent to said coil holding means for mating said first retaining means with said first coil and said second retaining means moved to an extended position for mating with said second coil.

3,858,297

AUTOMATIC SPRINGING MACHINE

Harold W. Scholin, Park Ridge; Hieronim L. Lisiecki, Chicago; George W. Butkus, Tinley Park, and Robert Eitzinger, 37 Plymouth Ct., Deerfield, all of Ill., assignors to said Eitzinger, by said Butkus

Filed June 11, 1973, Ser. No. 368,856
Int. Cl. B23p *19/04;* **B23q** *7/10*
U.S. Cl. 29—208 D **21 Claims**



1. A machine for applying an expandable ring member to a grooved object, or the like, comprising,

a. a pick-up assembly including a mandrel initially positioned at a first station and having, at its lower end, an outer diameter greater than the inner diameter of said ring member when in its unexpanded condition,

b. means for expanding a ring member located at said first station and applying it to said mandrel over the lower end thereof,

c. means for transferring said pick-up assembly, with the ring member on said mandrel, to a second station, and

d. means for stripping said ring member from said mandrel over the lower end thereof onto a grooved object positioned at said second station.

3,858,298

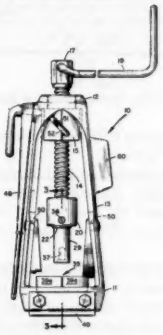
SWAGING APPARATUS

Jon K. Whitledge, Mantua, and Edward M. Kavick, Chardon, both of Ohio, assignors to Samuel Moore and Company, Mantua, Ohio

Continuation-in-part of Ser. No. 216,093, Jan. 7, 1972, Pat. No. 3,785,050. This application Dec. 11, 1972, Ser. No. 313,792. The portion of the term of this patent subsequent to Jan. 15, 1991, has been disclaimed.
Int. Cl. B23p *19/02*
U.S. Cl. 29—237 **4 Claims**

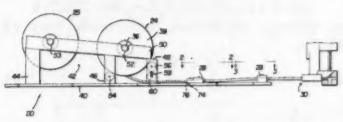
1. An apparatus for securing a fitting to a hose which comprises a ball screw and ball nut assembly, a swaging die having a die cavity adjacent one end of the screw with the cavity aligned with the screw, means for supporting said ball nut and said die against relative longitudinal movement and against rotation with the screw comprising a cast one-piece frame having a first end member, a second end member spaced longitudinally from the first end member and a pair of laterally spaced side support members integral at one end thereof with

the said first end member and integral at the other end with the said second end member, an opening through the said first end member and an opening through the second end member for supporting the swaging die, said openings having a common axis, said ball screw passing through said opening through the first end member and said ball nut secured to said first end member, means carried by said end of the screw for pressing a fitting and hose assembly in said die cavity comprising a holder element secured to the said screw end for rotation



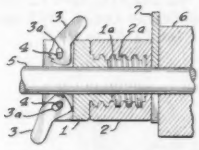
therewith and having a cavity therein, a pusher element having one end in the cavity of the holder element and an opposite end adapted to support a fitting and hose assembly as it is moved towards the die cavity, means for securing the pusher element in the cavity of the holder element against rotation with the screw and against substantial longitudinal movement relative to the screw comprising a thrust bearing in the cavity of the holder element and about the said pusher, and means for turning the screw in the nut.

3,858,299
NUT COIL DE-REELER
Harold T. Woods, Livonia, Mich., assignor to Multifastener Corporation, Detroit, Mich.
Filed Aug. 27, 1973, Ser. No. 391,115
Int. Cl. B23p *19/04, 19/00*
U.S. Cl. 29—211 D **12 Claims**



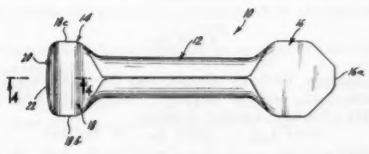
1. A de-reeler for unwinding a coiled strip of frangibly interconnected nuts from a reel for subsequent sequential installation of said nuts in a panel by shearing the frangible connectors between the nuts, comprising: a base plate; a frame including a pair of supports supported upon said base plate having a rear roller journalled therein, and a pair of front supports on said base plate having a front roller journalled therein; said front and rear rollers rotatably supporting a reel having a strip of interconnected nuts coiled thereon; a tension roller mounted in said front supports between said front roller and said base plate, and including means for absorbing tension and compression forces from said trip of interconnected pierce nuts; and a travelling member in front of and spaced apart from said front roller and mounted for free movement transverse to the path of travel of said unwound strip of pierce nuts for following the lateral unwinding of said pierce nuts from said reel; said travelling member having an interior passage perpendicular to the axes of said rollers with an enlarged opening facing said reel and shaped to accept entry of only properly oriented nuts.

3,858,300
JACKSCREW DEVICE
Henry B. Borel, 210 Burr St., Houston, Tex. 77011
Filed Sept. 29, 1972, Ser. No. 293,649
Int. Cl. B23p *19/02*
U.S. Cl. 29—256 **2 Claims**



1. A jackscrew device for assembling or disassembling a shaft and a member tightly mounted on said shaft, said jackscrew device comprising a screw and nut threadedly engaging one another and having a common longitudinal axis and aligned longitudinal openings through both screw and nut concentric about said axis to receive a shaft, the threads in the nut being formed in a longitudinal opening extending from the end of the nut to be spaced away from the member mounted on the shaft, said screw having a head of larger diameter than the portion thereof screwed into said nut and releasable means on said head to secure it tightly to said shaft for common movement therewith, both said nut and said screw having hexagonal exterior surfaces engageable by crescent wrenches to tighten or loosen the threaded engagement therebetween, said releasable means on the head being clear of the wrench-engaging surfaces of the screw head in operative position.

3,858,301
TOOL FOR REMOVING WINDSHIELD MOLDINGS
Abelardo A. Tesone, 60-11 Broadway, Woodside, N.Y. 11377
Filed Apr. 10, 1974, Ser. No. 459,787
Int. Cl. B25b *27/00*
U.S. Cl. 29—278 **4 Claims**



1. A tool for removing a molding strip from around the windshield of an automobile, said molding strip being attached to the frame surrounding said windshield by means of a plurality of spaced fasteners, said tool comprising a handle, an L-shaped member having first and second sections, said first section being connected to one end of said handle and lying in a first plane at an angle with the longitudinal axis of said handle, said second section being connected to said first section at substantially right angles and lying in a second plane substantially perpendicular to said first plane and extending toward the longitudinal axis of said handle, said second section having a working edge formed at the terminal end thereof

remote from said first section, and said working edge being shaped for engaging said sliding relative to said fasteners to force said fasteners away from said frame and thereby disengage said fasteners and said molding strip so that said molding strip may be removed, said working edge including a central curved edge and said edges, all lying in said second plane, said side edges forming a continuous taper from said curved edge to the juncture of said first and second sections.

3,858,302

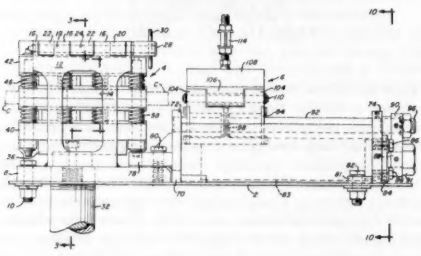
METHOD OF PREPARING THE ENDS OF CABLES FOR SPLICING

Eugene V. Abarotin, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 243,331, April 12, 1972, Pat. No. 3,786,697. This application Oct. 3, 1973, Ser. No. 403,229

Int. Cl. B23p *19/02*

U.S. Cl. 29—427 **1 Claim**



1. The method of cutting conductors of a multi-conductor cable to different lengths and stripping a jacket from the end of the cable which comprises passing a straight end portion of said cable between multiple cutters spaced apart in the direction of the cable length, laying said portion on a gripping means located inwardly from the end to be cut and stripped, closing said gripping means on the cable, bringing said cutters together simultaneously to cut through said jacket at a location between the end of the cable and the position where the cable is gripped and bringing other of said cutters together to cut through said conductors at different distances between the end of the cable and the position where said jacket is cut, and then moving said gripped cable away from said cutters while the end portions of the conductors remain straight and while the cutters are together to remove the jacket from the cable between the cut portion and the end of the cable.

3,858,303

METHOD OF BRAZING

Eric Anthony Horbury, Quorn, and David Ronald Evetts, Nottingham, both of England, assignors to Rolls-Royce (1971) Limited,, London, England

Filed Apr. 13, 1973, Ser. No. 350,965

Claims priority, application Great Britain, Apr. 20, 1972, 18351/72

Int. Cl. B23k *31/00*

U.S. Cl. 29—490 **21 Claims**

1. A method of brazing comprising the steps of coating at least part of at least one surface in the vicinity of a brazing operation which surface is in danger of having the products of said brazing operation deposited thereon and which is to be protected from contamination by said products, with at least one layer of a composition comprising a mixture of an organophilic cation-modified clay (as herinbefore defined) and a volatile organic vehicle, removing substantially all of said vehicle from said coating to leave a film of said clay on said at least one surface, and effecting said brazing operation.

3,858,304

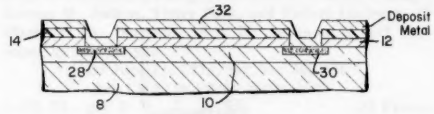
PROCESS FOR FABRICATING SMALL GEOMETRY SEMICONDUCTOR DEVICES

Hayden M. Leedy; Loren G. McCray, Jr., both of Thousand Oaks, and Harry L. Stover, Newberry Park, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 282,536, Aug. 21, 1972, abandoned. This application Jan. 30, 1974, Ser. No. 438,081

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **2 Claims**



1. A method of making semiconductor devices including the steps of:

a. forming an insulating coating on the surface of a layer of semiconductive material;

b. forming a resist pattern on said insulating coating;

c. removing selected regions of said insulating coating which are exposed by openings in said resist pattern, thereby exposing an area or areas of said semiconductive layer;

d. accelerating dopant ions into said exposed area or areas of said semiconductive layer and into the crystal lattice of said semiconductive layer to alter the conductivity thereof and to form planar P-N junctions in said semiconductive layer wherein said junctions terminate at said surface under said insulating coating;

e. depositing metalization on the exposed surface area of said resist pattern and into contact with the exposed area or areas of said semiconductive layer to thereby make electrical contact to said P-N junctions, and thereafter

f. removing said resist pattern from said insulating coating to thereby simultaneously remove the portion of said metalization layer overlying said resist pattern, leaving intact the metalization in electrical contact with said semiconductive layer, whereby the ion implantation temperatures utilized during the acceleration of dopant ions into the semiconductor crystal lattice are insulfficient to deleteriously affect said resist pattern.

3,858,305

METHOD OF MANUFACTURING A DEVICE FOR CONVERTING ELECTRIC OSCILLATIONS INTO ACOUSTIC VIBRATIONS AND VICE VERSA

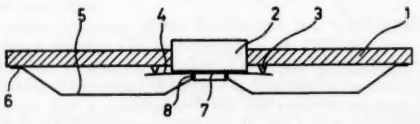
Gerrit Schenkel, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 27, 1972, Ser. No. 248,218

Claims priority, application Netherlands, May 12, 1971, 7106490

Int. Cl. H04r *31/00*

U.S. Cl. 29—594 **13 Claims**



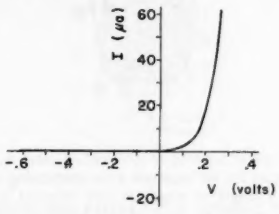
1. A method of fabricating an electromagnetic sound transducer device provided with a non-magnetic vibratory diaphragm member joined to a magnetic diaphragm of an electromagnetic drive system for transmitting vibrations therebetween and to a support member, comprising the steps of first rigidly securing the drive system to the support member so as to form an integral assembly unit, subsequently placing at least part of the non-magnetic diaphragm member in axial alignment with an axial cylindrical guide member so that one of

said aligned member is disposed with a certain amount of clearance in the other aligned member, and then securing said non-magnetic diaphragm to the guide member.

3,858,306
ALLOY JUNCTIONS IN MERCURY CADMIUM TELLURIDE

Arvid E. Kloek, Minneapolis, and Myrsyl Walter Scott, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 5, 1971, Ser. No. 169,572
Int. Cl. H01l *15/02*
U.S. Cl. 29—572 **6 Claims**



1. A method of forming an infrared sensitive photodiode comprising:

heating an indium body to form liquid indium,

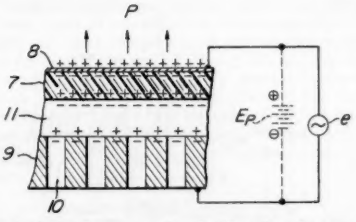
maintaining a P type body of mercury cadmium telluride at a temperature substantially less than 170°C, and

depositing the liquid indium on a surface of the P type body of mercury cadmium telluride to form an indium layer and a rectifying, photodetecting junction proximate the interface of the P type body and the indium layer.

3,858,307
ELECTROSTATIC TRANSDUCER

Hisashi Yoshimura, Minoo, and Nobuhisa Atoji, Shijonawate, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 95,856, Dec. 7, 1970, abandoned. This application Mar. 5, 1973, Ser. No. 337,843
Claims priority, application Japan, Dec. 11, 1969, 44-99939
Int. Cl. H04r *31/00*
U.S. Cl. 29—594 **3 Claims**



1. A method of polarizing a vibratile film of an electrostatic transducer, the vibratile film being permanently polarized after assembly into a housing of the transducer, comprising the steps of:

preparing an unpolarized vibratile film of a plastic material capable of readily undergoing permanent polarization,

depositing a vibratile electrode of metal on one surface of said vibratile film, said vibratile electrode being vibratile with said vibratile film,

assembling into a housing of the transducer said vibratile film on which said vibratile electrode is deposited,

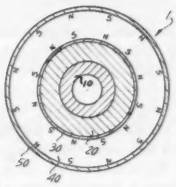
disposing in said housing a stationary electrode of metal opposite to said vibratile film and spaced therefrom so as to define an air layer, and

then applying across said vibratile and stationary electrodes a saturation polarizing voltage without heating said vibratile film, said saturation polarizing voltage causing ferroelectric phenomena in said vibratile film due to absorbed surface changes to maximize the residual charge on said vibratile film after the removal of said saturation polarizing voltage, thereby polarizing permanently said vibratile film.

3,858,308
PROCESS FOR MAKING A ROTOR ASSEMBLY

A. Duane Peterson, Bainbridge, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed June 22, 1973, Ser. No. 372,717
Int. Cl. H02k *15/04*
U.S. Cl. 29—598 **9 Claims**



1. A process for making an integral rotor assembly comprised of a ferromagnetic hub and a ring-shaped cobalt alloy magnet, said process comprising:

applying a coating of inert material having a melting point above the sintering temperature of said cobalt alloy to the surface of said ferromagnetic hub;

placing said hub in an annular die cavity having a central axis so that the central axis of said hub is coaxial with said central axis of said die cavity;

surrounding the outside of said hub with metal particles by filling said die cavity with metal particles consisting essentially of cobalt and at least one rare earth metal;

establishing a magnetic field through the contents of said die cavity, said magnetic field radially oriented with respect to the central axis of said die cavity;

applying pressure to the contents of said die cavity to compact said metal particles into a solid one-piece annular member; and

applying sufficient heat to sinter said metal particles to the coated hub, thereby forming an integral rotor assembly.

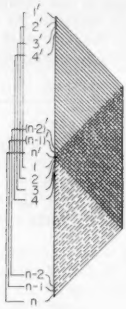
3,858,309
METHOD OF MAKING A ROTOR FOR AN ELECTRIC DEVICE

Kazuo Ishikawa, Yokohama, Japan, assignor to Jeco Co., Ltd., Tokyo, Japan

Division of Ser. No. 187,802, Oct. 8, 1971, abandoned. This application June 4, 1973, Ser. No. 366,779
Claims priority, application Japan, Oct. 12, 1970, 45-89462
Int. Cl. H02k *15/04*
U.S. Cl. 29—598 **6 Claims**

1. A process for producing a cylindrical rotor which comprises the steps of providing an elongated strip of flexible insulative film with a number of mutually insulated parallel conductors with a regular interval on one surface thereof, each of said conductors extending along a straight line generally paralleling opposite longitudinal edges of said strip, cutting said strip along two parallel lines intersecting said longitudinal edges at an acute angle to form a parallelogram wherein said conductors terminate flush with the cut edges, folding back said parallelogram on itself with said conductors on the outer surfaces thereof to obtain a trapezoidal folded sheet with the ends of said conductors all lying on a single edge of

the trapezoid, rolling up said trapezoidal folded sheet to obtain a cylinder with the ends of said conductors all lying on the periphery of one end of the cylinder, and connecting the



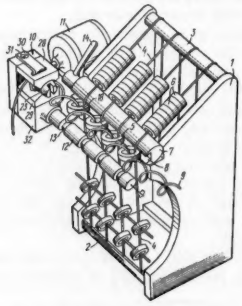
corresponding ends of said conductors on said sheet by soldering the ends of the conductors on one side of the sheet directly to the ends of the conductors on the other side of the sheet.

3,858,310

METHOD OF MAKING FERRITE MATRICES

Jury Emelyanovich Seleznev, Vesenny proezd, 4a, kv. 16; Jury Alexandrovich Burkin, Tsvetnoi proezd, 29, kv. 24, and Sergei Vladimirovich Kuzmin, ulitsa Akademicheskaya, 19, kv. 54, all of Novosibirsk, U.S.S.R.

Filed Dec. 27, 1972, Ser. No. 319,053
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 **4 Claims**



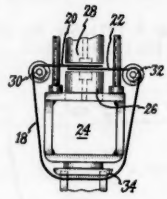
1. A method of making ferrite matrices, comprising the steps of: threading a plurality of ferrite cores, the cores being arranged into stacks, each of the stacks being threaded about at least one wire, the number of the cores disposed on said at least one wire being equal to the number of columns in a matrix which is to be made; arranging the stacks into an array in which the number of the stacks is equal to the number of the wires in the direction of one coordinate of the matrix which is to be made; separating one of the ferrite cores from each of the stacks; arranging the separated ferrite cores in a plane intersecting the wires; winding an additional wire into a helix; rotating the helix and simultaneously forwarding same; threading said additional wire wound into the helix through the ferrite cores in the direction of a second coordinate of the matrix so that the leading end of the helix passes in succession through all of the ferrite cores arranged in the plane, whereby at least one of the ferrite cores is received about at least each turn of the helix; and straightening said additional wire wound into the helix, whereby the ferrite cores received thereabout become positioned at the intersections of the wires and said additional wire and each of the cores is turned into a desired angular position.

3,858,311

METHOD OF MAKING A CRIMP LOCKED OUTER TURN FOR INDUCTION CORE

Willi Klappert, Hickory, N.C., assignor to General Electric Company

Division of Ser. No. 240,466, April 3, 1972, Pat. No. 3,812,554. This application Dec. 3, 1973, Ser. No. 421,230
Int. Cl. H01f *7/06*
U.S. Cl. 29—609 **3 Claims**



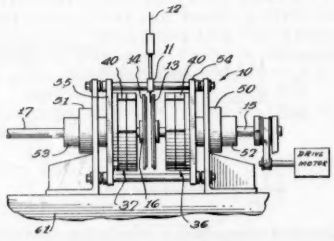
1. A method of forming an interlocked outer turn for use as a stacking ring for an induction core comprising the steps of:
a. forming a length of magnetic core material into an outer turn of a core with the ends of said length of magnetic core material in engaging relation
b. placing said length of said magnetic core material in a punch device having a movable ram and cooperating die members
c. engaging the engaging ends with at least one of said die members to make crimp cuts in said engaging ends and
d. actuating said movable ram to contact said turn at a point spaced from said engaging ends and thereby move said engaging ends relative to each other causing said crimp cuts to interlock with each other.

3,858,312

METHOD OF WINDING A COIL

Hashem M. Gharaibeh, Palatine, Ill., assignor to Warwick Electronics, Inc., Chicago, Ill.

Filed Apr. 6, 1972, Ser. No. 241,531
Int. Cl. H01f *7/06*
U.S. Cl. 29—605 **13 Claims**



3. A method of forming a coil assembly, comprising the steps of: holding one end of a flexible channel element; causing the channel element to extend from said held end in an annular configuration about an arbor with the channel element opening radially outwardly and with the oposite end of the channel element spaced adjacent said one end; retaining one end of a wire circumferentially adjacent said one end of the channel element; and winding the wire into said annular channel element to form a wire coil in said channel element with said one end of the wire extending through the space between said ends of the channel element.

3,858,313
ELECTRIC CAN OPENER

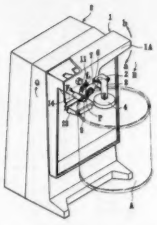
Tokio Yamaguchi, Aichi-ken, Japan, assignor to Seiwa Denki Company, Ltd., Aichi-ken, Japan

Filed Feb. 9, 1973, Ser. No. 331,029

Claims priority, application Japan, Feb. 10, 1972, 47-17008; Feb. 10, 1972, 47-17009; Feb. 10, 1972, 47-17010; Feb. 25, 1972, 47-23685; Feb. 26, 1972, 47-23877

Int. Cl. B67b *7/38*

U.S. Cl. 30—4 R **5 Claims**



3. In an electric can opener having a housing member with a power supply push-button switch, a removable handle with a rotating cutter and said handle being vertically movable and pushing said push-button to effect switching to turn on a driving motor, and a can rotor provided in the housing member turning the can, the improvement therein, wherein: there is:

a. a shaft aperture (**13**) in said housing member;

b. a handle shaft (**11**) for the handle (**1**) passing through said shaft aperture (**13**) and a pressure spring (**2**) attached to said handle;

c. an elongated arc-shaped guide passage (**10, 12**) in said handle along a part of the circumference around said handle shaft (**11**);

d. a connecting pin (**14**) inserted in said elongated arc-shaped guide passage (**10, 12**) and an enlarged diameter portion (**16**) said small diameter portion being slidably movable in said elongated guide passage (**10, 12**);

e. an enlarged retaining groove (**10***a*, **12***a*) at one end of said elongated guide passage (**10, 12**) in which the large diameter portion (**16**) of said pin (**14**) falls by the movement of the handle member (**1**); and,

f. said push-button (**30**) projecting from said housing (**8**) and being so disposed that rotation moment according to resultant force (F) combined by a reaction force (f_1) against the cutter shearing force and another reaction force (f_2) against the pressure spring (**2**) and the push-button (**30**) is opposite to rotation moment (R) according to force pushing down the handle relative to the handle shaft (**11**), the handle thus engaging said push-button during the operation of the can opener holding the push-button down due to the foregoing reaction forces.

3,858,314
DRIVE ASSEMBLY FOR AN ELECTRIC SHAVER

J. Edward Brenneman, and Robert S. Waters, both of Lancaster, Pa., assignors to Schick Incorporated, Lancaster, Pa.

Filed June 20, 1973, Ser. No. 371,765

Int. Cl. B26b *19/02*

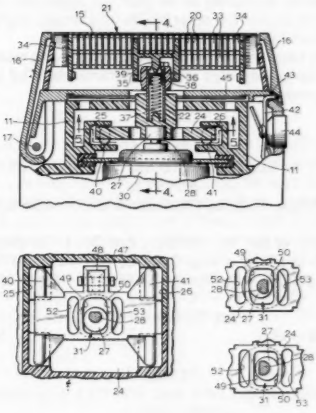
U.S. Cl. 30—43.92 **6 Claims**

5. In an appliance of the type having a motor and a reciprocatively driven working member, a drive arrangement for said working member comprising, in combination:

a slidably-mounted actuator member mechanically coupled to said working member and having an elongated drive recess;

means comprising at least one relief recess in said actuator member adjacent said drive recess for rendering at least one side wall of said drive recess flexible to compensate for said size variations in said drive recess; and

means comprising an eccentric drive cam operatively engaged to said drive recess for reciprocatively driving said



actuator member, the diameter of said cam being greater than the width of said drive recess when said side walls are not flexed to compensate for undesirable size variations in said drive recess.

3,858,315
SHAVING UNIT FOR SAFETY RAZOR

Frank A. Ferraro, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Sept. 17, 1973, Ser. No. 398,104

Claims priority, application Great Britain, Jan. 23, 1973, 3365/73

Int. Cl. B26b *21/54, 21/22*

U.S. Cl. 30—346.58 **21 Claims**

1. A replaceable shaving unit for a safety razor, wherein said razor comprises a transverse guard surface, spaced stop means for locating said shaving unit with respect to said guard surface, a blade seat member, and means for clamping said shaving unit on said blade seat member and for biasing said shaving unit to said spaced stop means, said shaving unit comprising:

a. a first razor blade having a cutting edge and a blunt rear edge adapted to be positioned upwardly and rearwardly of said guard surface, and an underside for abutting engagement with said blade seat member,

b. a second razor blade having a cutting edge and a blunt rear edge positioned upwardly and rearwardly of said first razor blade,

c. means interconnecting said first and second razor blades for vertically spacing said first and second razor blades apart, said spacing means including rear surface means extending rearwardly to at least the blunt rear edges of said bottom and top razor blades for abutting engagement with said biasing means, and

d. means extending forwardly from said spacing means to at least the cutting edge of said first razor blade for abutting engagement with said spaced stop means.

3,858,316

SHAVING HEAD HAVING SEPARATELY SPRUNG BLADES

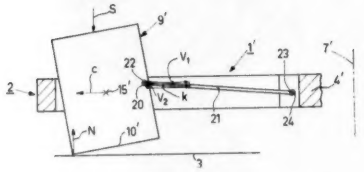
Eduard Willem Tietjens, Oliemolenstraat, Drachten, Netherlands

Continuation of Ser. No. 318,011, Jan. 26, 1972, abandoned. This application Aug. 3, 1973, Ser. No. 385,537

Claims priority, application Netherlands, Sept. 25, 1971, 7113226

Int. Cl. B26b *19/14*

U.S. Cl. 30—43.6 **3 Claims**



1. For use with a dry shaver which includes a housing and a drive means for operating said shaving head, a shaving head comprising, a shear plate supported by the housing, a blade carrier within said housing and rotatably drivable about its axis of rotation by said drive means, the blade-carrier having a plurality of slots extending through it parallel to said axis, each slot having inner and outer edge surfaces respectively radially closer to and remote from said axis of rotation, a plurality of blades each positionable in one of said openings, each blade having a center of gravity (c.g.), an upper cutting edge for engagement along a line of contact with said shear plate, and inner and outer edges adjacent to corresponding edges of an associated slot, and associated with each blade a pull rod having first and second ends respectively coupled pivotally at coupling points to the inner edge of the blade and to the carrier at the inner edge of the slot, the c.g. of the blade and the blade coupling point defining a straight line which is generally parallel to the blade cutting edge when the blade is at rest and in said line contact with the shear plate, each blade being tippable within said slot the blade when rotated by said blade carrier subject to centrifugal forces which act at its center of gravity urging said c.g. generally outward of said axis, and which form part of a couple restoring force urging the blade back to its non-tipped position when it has become tipped in operation, said couple being proportionately greater when the blade tips farther and the center of gravity is moved further from its non-tipped position.

3,858,317

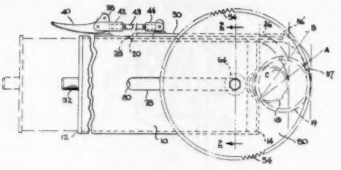
PIPE CUTTING ADAPTER FOR POWER DRILLS

Clancy B. Ford, 6651 18th Ave., Sacramento, Calif. 95820, and Charles E. Ford, 16901 Schoolcraft St., Van Nuys, Calif. 91406

Filed Dec. 13, 1973, Ser. No. 424,380

Int. Cl. B23d *21/00*

U.S. Cl. 30—92 **6 Claims**



1. A tool for cutting a stationary cylindrical pipe comprising:

a rigid elongate thin wall metal housing substantially square in cross-sectional shape having a front end and a rear end, the front end being formed in a V-shaped transversely disposed jaw having spaced apart upper and lower lips, the housing further including an elongate U-shaped slot extending from intermediate the front and rear end of said housing to exit at said front

clamp means slidably mounted on the track rails for releasably clamping said housing to the pipe in stationary relationship therewith,

a circular saw blade externally supported by said housing and translationally movable relative thereto,

drive means connected to the saw blade for rotating said blade, the drive means including a drive-shaft extending outwardly from said housing for connection with a drill chuck, and

guide means contained within said housing comprising an elongate slide block sized to fit closely there within in substantially uniform surface area contact therewith and slidably movable thereto for guiding the translational movement of said saw blade in a plane substantially perpendicular to the center longitudinal axis of said cylindrical pipe when said housing is clamped to said pipe by said clamp means.

3,858,318

PROCESS AND APPARATUS FOR POSITIONING AN ASSEMBLY OF INTERSECTING BEAM REINFORCING STRUCTURAL BARS WITH RESPECT TO PREVIOUSLY POSITIONED COLUMN REINFORCING STRUCTURAL BARS

Kiyoshi Muto, Tokyo; Yasuhisa Yamamoto, Kyoto; Yoshinori Toyoda; Shozo Azemi, both of Chiba; Shigeru Okano, Ichihara; Kenya Masuyama, Chiba; Seitaro Aihara, Tokyo; Takao Ito, Tokyo; Isamu Ogawa, Tokyo, and Mitsumasa Harada, Tokyo, all of Japan, assignors to Kajima Kensitsa Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1973, Ser. No. 392,374

Claims priority, application Japan, Mar. 16, 1973, 48-30606

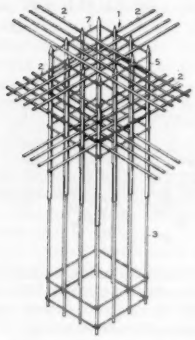
Int. Cl. B23p *19/04*

U.S. Cl. 29—433 **20 Claims**

1. A process for attaching an assembly of intersecting beam reinforcing structural bars to previously positioned column reinforcing structural bars at a previously determined position thereon comprising the steps of:

1. placing guidepipes which

a. are generally pipe-like in shape,
b. have upper butt ends which are formed into an apex, and
c. have lower butt ends which are concave and adapted to receive column reinforcing structural bars therein over at least some of the previously positioned column



reinforcing structural bars, the lower but end of each guidepipe receiving the upper end of each column reinforcing structural bar;

2. guiding said assembly of beam reinforcing structural bars down over said guidepipes; and
3. removing said guidepipes from the tops of said column reinforcing structural bars.

3,858,319
SOLDERING

John J. Stokes, Jr., Murrysville, and Charles A. Benish, Tarentum, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 30, 1973, Ser. No. 355,756
Int. Cl. B23k *31/02*
U.S. Cl. 29—496 **22 Claims**

1. In the method of treating a metal surface wherein a reactive chemical flux containing at least 50% zinc chloride is mixed with a non-aqueous solvent vehicle to form a flux slurry which is applied to said surface and wherein the surface is heated to a sufficient temperature to volatilize said non-aqueous vehicle and activate said zinc chloride base flux to cause said flux to react with said metal surface to produce a zinc or zinc alloy coating thereon, the improvement wherein said zinc chloride based reactive flux is provided as an aqueous paste containing 4 to 15% water, the balance being substantially the zinc chloride based reactive flux.

3,858,320
UNIVERSAL CULINARY TOOL WITH PROTECTIVE SCREEN SHIELD

James Neal, 1212 W. 19th Pl., Gary, Ind. 46407, and Elbert Duvall, 639 Allen St., Gary, Ind. 46401

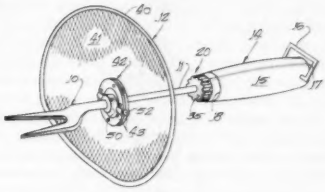
Filed Apr. 19, 1974, Ser. No. 462,428
Int. Cl. A47j *43/28*
U.S. Cl. 30—323 **3 Claims**

1. A universal culinary tool including a protective screen type shield and which is adapted for use with a plurality of interchangeable kitchen utensils, the combination comprising: a kitchen utensil having an elongated cylindrical shaft, the shaft terminating at one end in a terminal end portion having a reduced diameter relative to the diameter of the main shaft, the reduced diameter portion defining with the main shaft portion an annular shoulder therebetween, and a pair of diametrically opposed axially extending locking ear members each projecting outwardly of the reduced shaft end portion;

an elongated handle member having a closed back end and a front end provided with an axially extending recess opening out of said front end;

attachment means mounted on said front end of said handle and adapted to receive said terminal end portion of said utensil shaft therein for removably securing said shaft to said handle;

a protective screen shield comprised of an endless rim member of a size and configuration substantially greater



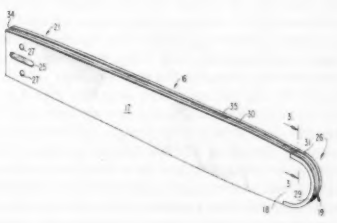
than the utensil shaft, a fine mesh screen affixed to said rim and projecting therebetween in the plane of said rim, an opening extending transversely through said screen approximately centrally thereof; and

a lock and swivel mechanism affixed to said screen in said opening and adapted to slidingly receive said utensil shaft therethrough for positioning said screen shield at any selected position along said shaft with said shield being swivelly supported for swinging movement to occupy selected positions relative to the axis of the utensil shaft.

3,858,321
CHAIN SAW CUTTER BAR AND ITS METHOD OF FABRICATION

Francis Henry Conaty, Torrance, Calif., assignor to The McCulloch Corporation, Los Angeles, Calif.

Filed Aug. 22, 1973, Ser. No. 390,331
Int. Cl. B26b *17/02*
U.S. Cl. 30—383 **11 Claims**



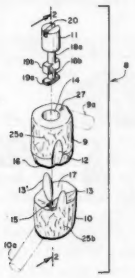
7. A method of fabricating a chain saw cutter bar comprising the steps of:

precision casting a nose rail from a material suitable to form a wear resistant hard facing;

applying a metal brazing alloy, suitable to bond the precision cast nose rail to a chain saw cutter bar main body portion, between the nose rail and the cutter bar main body portion; and

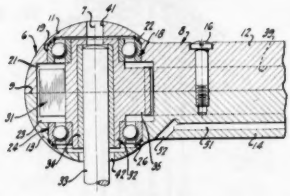
brazing the cast nose rail to the cutter bar main body portion to thereby form a chain saw cutter bar.

3,858,322
DENTAL CAP BRIDGE LOCK
Zwe Padeh, 1285 52nd St., Brooklyn, N.Y. 11219
Filed Aug. 27, 1973, Ser. No. 391,968
Int. Cl. A61c *13/22*
U.S. Cl. 32—5 **6 Claims**



1. A dental cap bridge-lock device comprising in combination: a first annulus structure defining upper and lower surfaces and a stepped passage wall partially circumscribing a passage extending between the upper and lower surfaces such that in one dimension the upper and lower portions of the passage have substantially equal diameters and in another dimension the upper portion of the passage has a greater dimension than the lower portion of the passage; a second aperture structure having an upper surface and defining about centrally there an aperture channel extending downwardly, the aperture channel being stepped in the walls thereof such that in an upper portion the diameter is greater in one dimension than in another dimension and in a lower portion the diameter is the same in more than one dimension and larger than the smaller diameter of the upper portion; and a headed shaft structure of which the head diameter in at least one dimension is greater than the smaller diameter of the lower portion of the first annulus structure, and the headed shaft structure defining an elongated shaft having a diameter less than diameters of a lower portion of the first annulus structure and less than diameters of the upper portion of the second apertured structure and defining a key element extending laterally from the shaft such that the headed shaft structure is insertable shaft-first through the passage of the first annulus structure and into the channel of the second apertured structure and in the inserted state being revolvable such that the key element locks beneath the step structure within the lower portion of the second apertured structure thereby anchoring the first annulus structure to the second apertured structure; said headed shaft structure defining a head structure having a substantially flat-faced surface including shaped therein instrument manipulation means for utilizing an accessory instrument therewith to turn said head structure within said channel; said first annulus structure and said second apertured structure being seatable one on the other with the lower surface of the annulus structure in substantially flush contact with the upper surface of the second apertured structure with the passage of the first annulus structure substantially lineally aligned with the channel of the second apertured, and the first annulus structure lower surface and the second apertured structure upper surface each including mating structure positioned such that the lesser diameter of the lower portion of the passage of the first annulus structure is substantially aligned with lesser diameter of the upper portion of the channel of the second apertured structure; each of said first annulus structure and said second apertured structure being of a metallic composition heat-fusable with fusable metal compositions of the tooth crown and the prepared-tooth coping such that the first annulus structure is fusably attachable to a tooth crown and such that the second apertured structure is fusably attachable to a prepared-tooth coping.

3,858,323
DENTAL HANDPIECE
Lloyd P. Flatland, 15 Quisisana Dr., Kentfield, Calif. 94904
Filed Oct. 27, 1972, Ser. No. 301,263
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 **3 Claims**



1. In a dental handpiece having a head formed of two housing halves having abutting planar surfaces defining a central plane and means removably securing said housing halves together, the improvement comprising:

each housing half having a generally cylindrical cavity, opening to said central plane and opposed to the cavity in the other housing half to define therewith a cylindrical chamber;

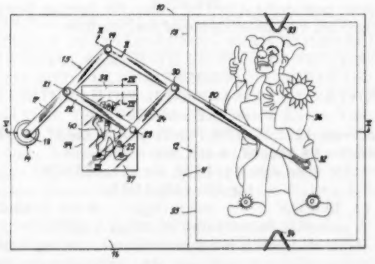
each of said cavities having a cylindrical recess in the bottom thereof, of less diameter than said cavities, the outermost portions of said cavities and recesses lying in the surface of an imaginary sphere and the outer surfaces of said housing halves being configured to define a sphere concentric to said imaginary sphere and of only slightly larger diameter;

an antifriction bearing seated in each recess;

a generally cylindrical turbine rotor in said cylindrical chamber and journalled in said bearings; and

duct means for directing operating fluid into said chamber and onto said rotor, said duct means being provided by a groove extending along at least one of said planar surfaces to said chamber.

3,858,324
PANTOGRAPH
Miron Padowicz, Kohlfurter Str. 41-43, 1 Berlin 36, Germany
Filed July 23, 1973, Ser. No. 381,437
Int. Cl. B43l *13/10*
U.S. Cl. 33—25 R **4 Claims**



1. A pantograph comprising:

a support having a pair of substantially coextensive support boards of rectangular outline, and means hingedly interconnecting said support boards along confronting edges thereof whereby said support boards may be spread into coplanar relationship to define a pair of support surfaces on the same side of said support.

a plurality of articulated bars forming a pantograph assembly pivotally mounted on one of said support boards along said support surfaces and having a stylus adapted to course along an outline on said one of said support boards, and a drawing instrument adapted to course along a geometrically similar outline on the other of said support boards; and

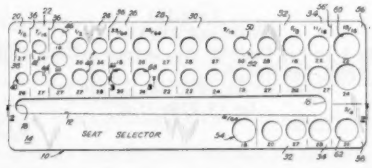
a transparent overleaf hingedly mounted on said surface of said one of said support boards and defining an image field thereon whereby a master image is receivable beneath said overleaf for tracing by movement of said stylus upon said overleaf, said assembly comprising a pedestal member anchored to said one of said support boards, a first bar member swingably mounted on said pedestal member at a first pivot, a relatively long bar member articulated to said first bar member at one extremity of said long bar member at a second pivot, a second bar member articulated to said long bar member by a third pivot at an intermediate location along said long bar member, and a third bar member articulated by a fourth pivot to an intermediate location of said first bar member and by a fifth pivot to an intermediate location of said second bar member, said second bar member being provided at a free end with said stylus and said long bar member being provided at a free end with said instrument, each of said pivots comprising a generally cylindrical boss on one of the members thereof, a bore formed in the other member of the respective pivot and rotatably receiving the respective boss, and a pin snugly fitted into the respective boss and having a head of a diameter greater than that of said cylindrical boss, said free end of said long bar member being bifurcated to snugly retain said instrument and said free end of said second bar member being provided with a socket snugly retaining said stylus, said pin at one of said second, third, fourth and fifth pivots being elongated beyond the members constituting same for engagement with said surface of said one of said support members.

3,858,325

COMBINED DIAMETER AND THREAD GAUGE

Ronald B. Goerler, Oyster Bay, N.Y., assignor to Crest/Good Manufacturing Company, Inc., Long Island, N.Y.

Filed June 29, 1972, Ser. No. 267,354
Int. Cl. G01b *3/36*
U.S. Cl. 33—199 R **1 Claim**



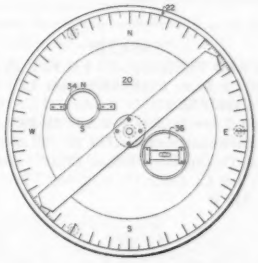
1. A gauge for identifying an elongated externally threaded member, comprising an elongated plate having opposed ends and formed with an elongated tapered slot extending longitudinally of said plate and terminating adjacent but short of the opposed ends of the plate and having along said slot a plurality of regions each of which is formed with a plurality of internally threaded openings with the openings of each region having a diameter equal to the width of the slot at the location of each region therealong, and the openings of each region having different numbers of threads per inch, so that an elongated externally threaded member can be moved along said slot from the wider toward the narrower end thereof until the member cannot move further along the slot for identifying a region having openings of the same diameter as that of said member, and so that said member can then be selectively introduced into the openings at the region whose openings equal the diameter of said member until that opening is found which has the same threads per inch as said member, said plate carrying at said regions indicia indicating the diameters of the openings of the several regions and indicating the number of threads per inch of the openings at each region, so that when the member is successfully threaded into a given opening, an identification is made of the diameter of the member and the number of threads per inch thereof, said plate carrying lines separating the several regions from each other, and said lines extending along said plate on opposite sides of said slot with openings of a given region being situated between said lines on opposite sides of said slot, one region with all of the openings thereof being situated on only one side of the slot while the next region with all of the openings thereof is situated in part on one side and in part on the other side of said slot, said gauge including a plurality of openings respectively having diameters which do not correspond to the width of any part of the slot so that a member which cannot be accommodated in the slot between opposed side edges thereof and between the opposed ends thereof and having a diameter and thread pitch corresponding to one of said plurality of openings can be identified by one of the latter openings, said openings which have diameters which do not correspond to the width of any part of said slot being of diameters larger than said wider end of said slot and being situated at the region of but beyond said wider end of said slot, said wider end of said slot terminating short of an adjacent end of said plate by a distance great enough to accommodate said openings whose diameters are larger than the wider end of said slot and the latter openings being situated between said wider end of said slot and the adjacent end of said plate.

3,858,326

METHOD AND APPARATUS OF OUTDOOR POSITION LOCATING

Leslie A. Hurd, 1216 Columbus, Muskogee, Okla. 74401

Continuation of Ser. No. 341,802, March 16, 1973, abandoned. This application Mar. 1, 1974, Ser. No. 447,428
Int. Cl. G01c *1/00, 3/04*
U.S. Cl. 33—273 **1 Claim**



1. Apparatus for establishing outdoor locations by plotting relatively known positions on a chart, together with the relative positions of surrounding landmarks to create a map with fixed locations thereon for use in determining another position or course and distance therefrom to another position on the map comprising:

A. a disc shaped base having a protractor scale thereon with angular bearing markings;

B. a measuring scope for taking angular bearings of distant landmarks from first and second known fixed positions for subsequent plotting as angular degree lines projected on a chart, so as to fix and plot at the intersections of the plotted lines the exact locations of the landmarks on the chart with respect to said known positions which thereupon constitutes a map, said measuring scope having a vertical reticule for zeroing in degree readings and twin horizontal reticules to indicate a pre-determined span at

a pre-determined distance to establish by an angle and distance the location of a second known position with respect to a first known position;

C. an elongated spirit level rotatably mounted on said base for leveling said base; and,

D. a compass mounted in said base for orienting said protractor.

3,858,327

SELF-CENTERING SIGHTING MARK

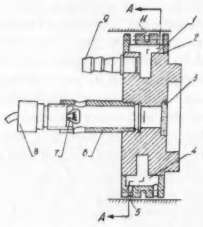
Hristo Kirilov Radev, and Emilia Anguelova Chobanova, both of Sofia, Bulgaria, assignors to Nauchnoizsledovatelski Sektor pri WMEI "Lenin", Quater Darvenitza, Bulgaria

Filed Apr. 12, 1972, Ser. No. 243,166

Claims priority, application Bulgaria, Apr. 16, 1971, 17359

Int. Cl. G01b *5/25*

U.S. Cl. 33—286 **1 Claim**



1. A self-centering sighting mark for determining the axis of a cylindrical hole into which it is inserted, comprising a cylindrical plug having a central axis including a body and a pressed-in sleeve, said sleeve having diametrically disposed holes bored therein, a common connecting chamber for said holes extending between said body and sleeve, longitudinal holes bored in said sleeve for communication with the atmosphere, a sighting mark fixed centrally with respect to the axis of the plug, and means for conducting air under pressure to said chamber whereby air flows through said diametrically disposed holes to provide an air cushion between the plug and the wall of the cylindrical hole.

3,858,328

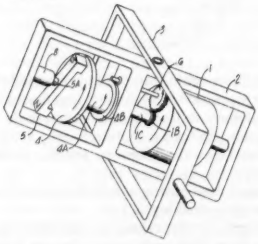
MEANS AND TECHNIQUES USEFUL IN GYROS

Russell Louis La Rose, 6111 Arrowroot Ln., Palos Verdes Peninsula, Calif. 90274

Continuation of Ser. No. 138,566, Apr. 29, 1971, abandoned, which is a continuation of Ser. No. 267,527, June 29, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 398,151

Int. Cl. G01c *17/38*; **G06g** *7/22*

U.S. Cl. 33—317 D **6 Claims**



1. A gyroscopic instrument whose spin axis will seek and remain substantially aligned with a particular direction comprising in combination; a gyro rotor and a rotor frame in which it is journaled; support means for cardanically supporting said frame in neutral equilibrium; means attached to the rotor frame for providing a magnetic dipole field whose axis is oriented across the rotor axis and which due to the dipole's tendency to align with the ambient magnetic field vector, applies a precessional moment to the rotor frame; means for moving the axis of the magnetic dipole field angularly throughout a circle lying in a plane across the rotor axis; the last-mentioned means being responsive to misalignment of the rotor axis with said particular desired direction and functioning to regulate the direction of the magnetic dipole field axis relative to said rotor frame so that the moment it applies to the frame is directionally related to the detected misalignment and acts to progressively precess the rotor axis in a direction to minimize misalignment with said particular desired direction.

3,858,329

PROCESS AND APPARATUS FOR DRYING POROUS MATERIAL

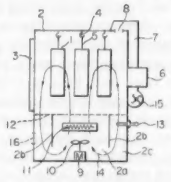
Tohru Koide, Yao; Takahiro Hattori, Okazaki; Yoshio Ohno, and Mitsuru Maruya, both of Sowamachi, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

Filed Mar. 16, 1973, Ser. No. 341,899

Claims priority, application Japan, Apr. 11, 1972, 47-36245

Int. Cl. F26b *3/34*

U.S. Cl. 34—1 **7 Claims**



1. A process for uniformly drying a porous material consisting essentially of polyvinyl acetal, which comprises

i. charging a water containing porous material consisting essentially of polyvinyl acetal into a closed drying chamber;

ii. blowing drying air onto the porous material; and

iii. directing electromagnetic microwaves of a very high or ultra high frequency having a drying capacity not higher than that of the drying air onto the porous material at a stage after the beginning stage of blowing the drying air.

3,858,330

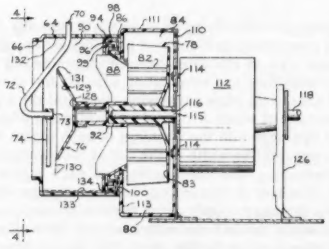
CONDENSER APPARATUS

Laddie A. De Pas, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 29, 1973, Ser. No. 410,783

Int. Cl. F26b *21/06*

U.S. Cl. 34—75 **8 Claims**



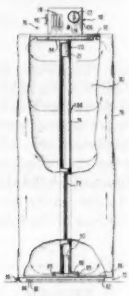
1. Condenser apparatus for removing moisture from air comprising:

a. a housing,
b. liquid inlet means at one end of said housing,
c. air inlet means at said one end of the housing,
d. air outlet means at the end of the housing opposite the air inlet means,
e. a rotatble disc positoned within the housing and downstream from said liquid inlet means,
f. a rotatable blower for inducing air flow from the air inlet means to the air outlet means,
g. means for collecting liquid droplets positioned within the housing and located between the disc and blower,
h. means for removing liquid from the condenser apparatus, and
i. means for rotatably driving the disc and blower.

3,858,331
GARMENT HEATING APPARATUS

John G. Lord, Swarthmore, Pa., assignor to Catton, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 263,061, June 15, 1972, abandoned. This application June 22, 1973, Ser. No. 372,685
Int. Cl. F26b *13/00*
U.S. Cl. 34—151 **9 Claims**

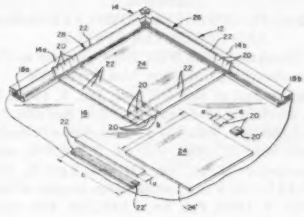


1. Garment heating apparatus comprising:
support means;
vertical conduit means carried by said support means and including a plurality of generally outwardly directed air discharge openings;
enclosure means defining a chamber around said conduit means;
blower means communicating with said conduit means for circulating air through said conduit means and said air discharge openings and into said chamber;
heater means for heating circulated air; and
means for mounting hanger means on said conduit means such that generally aligned and oppositely directed portions of said hanger means extend outwardly beyond said conduit means to support, in the region of said discharge openings, a garment in substantially encircling relation to said conduit means so that air ejected through said air discharge openings is directed generally outwardly, through said garment;
said blower means communicating with the upper end of said conduit means for circulating air downwardly through said conduit, and said conduit means including final outlet means at the lower end of said conduit for ejecting, into the lower portion of said chamber, heated air which has by-passed air discharge openings located above said final outlet means.

3,858,332
METHOD AND APPARATUS FOR DEMONSTRATING POLYNOMIAL ALGEBRAIC OPERATIONS

Peter Rasmussen, 2406 McKinley, Berkeley, Calif. 94703

Filed Aug. 27, 1973, Ser. No. 391,650
Int. Cl. G09b *23/02*
U.S. Cl. 35—30 **9 Claims**

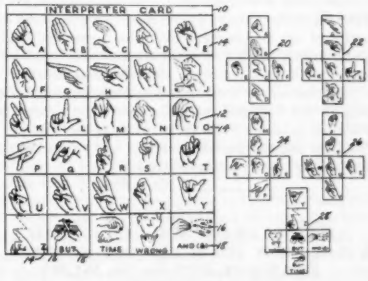


1. In an assembly for the demonstration of algebraic or arithmetic operations by the manipulation of a plurality of rectangular elements on a working surface, the improvement comprising:
first ones of said elements shaped to define squares each having the same edge dimension;
second ones of said elements shaped to define rectangles each having a width dimension equal to the edge dimension of said first elements and a length dimension greater than said width dimension;
third ones of said elements shaped to define squares each having the same edge dimension, last said edge dimension equal to the length dimension of said second elements and incommensurable with respect to the edge dimension of said first elements and the width dimention of said second elements;
a frame;
a first arm of said frame and a second arm of said frame;
connecting means secured to one of each of said arms to join the latter in end-to-end relationship and at right angles to each other; and
support means formed in each of said arms to removably carry a plurality of said elements.

3,858,333
EDUCATIONAL GAME APPARATUS

Warner Kopp, Brookwood Dr., Stanhope, N.J. 07874

Filed Feb. 1, 1973, Ser. No. 328,771
Int. Cl. G09b *1/32*
U.S. Cl. 35—35 J **6 Claims**



1. Educational game apparatus for teaching mute sign language adapted for use by one or more persons which comprises at least one set of at least five cubes, each cube face bearing indicia corresponding to a letter of the sign language finger spelling alphabet or a word in the hand sign language,

said cube faces containing all 26 letters of the sign language finger spelling alphabet; and at least one interpreter card bearing the entire sign language finger spelling alphabet and any hand word signs appearing on said cubes together with the Roman alphabetic or word equivalents thereof, whereby the cubes may be displayed and the letters or signs thereon identified.

3,858,334

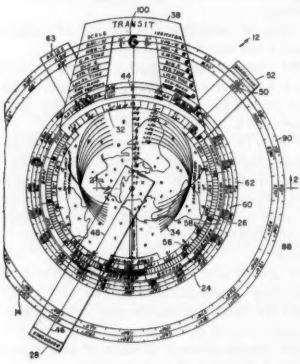
UNIVERSAL PLANISPHERE COMPLETE GUIDANCE AND COMPUTER SYSTEM

William A. Eisenhauer, Van Wert, Ohio, assignor to The Eisenhauer Manufacturing Company, Van Wert, Ohio

Continuation-in-part of Ser. No. 500, Jan. 5, 1970, Pat. No. 3,678,710, which is a continuation of Ser. No. 600,920, Dec. 12, 1966, abandoned, which is a continuation-in-part of Ser. No. 369,958, May 25, 1964, Pat. No. 3,290,799, which is a continuation-in-part of Ser. No. 271,658, April 9, 1963, Pat. No. 3,251,143, which is a continuation-in-part of Ser. No. 851,648, Nov. 9, 1959, Pat. No. 3,088,228. This application July 3, 1972, Ser. No. 268,646

Int. Cl. G09b *29/00*

U.S. Cl. 35—44 **21 Claims**



1. A sky and ground correlation, complete guidance and computer system providing an integrated scale model of the universe comprising a plurality of concentric dials of progressively smaller diameter having navigational and astronomical scales thereon, a sky map on the smallest of the plurality of dials having an Aries indicator portion extending radially therefrom, A Greenwich indicator dial which has a Greenwich indicator portion extending radially therefrom over the plurality of dials positioned concentric with and adjacent the smallest of the plurality of dials, a reference rule extending radially outwardly of the planisphere over the Greenwich indicator dial and plurality of dials, a sky,mask dial positioned over the concentric with the Greenwich indicator dial having a transit scale indicator and a horizon indication thereon and means securing all the dials and reference rule together centrally of the dials for rotation relative to each other whereby both astronomical and navigational displays and automatic computations may be readily accomplished.

3,858,335

PICTURE FRAME SIMULATING STRIP

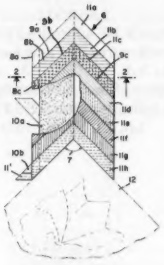
Frank Shore, 305 W. 28th St., New York, N.Y. 10001

Filed May 18, 1973, Ser. No. 361,483

Int. Cl. G09b *25/00*

U.S. Cl. 35—53 **6 Claims**

1. A picture frame-simulating device comprising in combination: a plurality of serially arranged strips each having at least two opposite substantially parallel edges, the parallel edges of the plurality being substantially parallel to one-another of other strips of the plurality, and hinge means connecting adjacent parallel edges of serially consecutive ones of the serially arranged strips, and the series of strips differing in appearance from one-another on their respective upper faces in color schemes, the parallel edges extending substantially lineally, the hinge means comprising a flexible backing strip onto which the lower surface of the respective ones of the serially arranged strips each is mounted, each next consecutive strip in series adjacent a preceeding strip being foldable backwardly, and under to beneath the preceding strip by bending and folding backwardly the backing strip, each of the plurality of strips including a second strip portion continuous with and extending from a terminal end of and in a common plane with the one of the plurality of which the second strip



portion is a continuation thereof and the second strip portion being extending in a direction at a right angle to the one of the plurality of which the second strip portion is a continuation thereof thereby forming a right-angle corner section simulative of a corner of a picture frame corner, the backing strip extending angularly to the parallel edges in a direction pointed by the vertex of the right-angle corner section such that when any mounted strip is folded under the next serially adjacent strip the second strip portion of the folded-under strip extends laterally sidewardly.

3,858,336

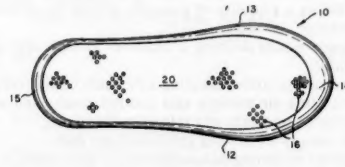
REMOVABLE OUTSOLE FOR SPORT SHOES

Ronald E. Brown, 10 N. Quaker Ln., Alexandria, Va.

Filed Nov. 30, 1973, Ser. No. 420,542

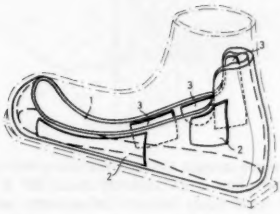
Int. Cl. A43b *1/10*

U.S. Cl. 36—2.5 AN **4 Claims**



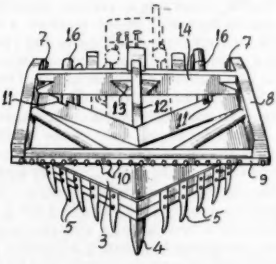
1. A protective sole for a shoe having spikes secured to the sole thereof, said protective sole comprising a smooth outer surface engaging area, side flanges extending upwardly from said protective sole and extending from adjacent the toe area to the heel portion of the protective sole, a toe cap and heel engaging areas formed integral with said surface engaging area and said flanges and a plurality of individual pliable projections formed on the upper surface of said protective sole, said projections being spaced longitudinally and laterally from each other, said projections being randomly positioned and spaced apart to thereby permit entry therebetween the spikes secured to the undersurface of a sole of a shoe and to permit said spikes to engage with the upper surface of said sole.

3,858,337
SKI BOOT
Raimund Walther Vogel, Lierstr. 25, Munich 19, Germany
Filed Dec. 17, 1973, Ser. No. 429,322
Claims priority, application Germany, Jan. 1, 1973, 2300602
Int. Cl. A43b *23/07*
U.S. Cl. 36—55 **4 Claims**



1. An article of footwear with a lining which can be detached from the article of footwear, consisting of a sole for supporting the foot and side walls, surrounding the foot in its length and breadth at least partly, made of foamed, predominantly open-celled plastic, characterized in that the lining on at least one of its side walls is provided with detachable, interchangeable fitting parts.

3,858,338
STUBBING OR WEEDING DEVICES
Hugo Soares Queiroz, Sao Paulo, Brazil, assignor to Industria e Comercio de Implementos Agricolas e Desmantamento de Carrado Iciadec LTDA,, Itatinga, State of Sao Paulo, Brazil
Filed Dec. 12, 1972, Ser. No. 314,311
Int. Cl. A01g *23/06*
U.S. Cl. 37—2 P **2 Claims**



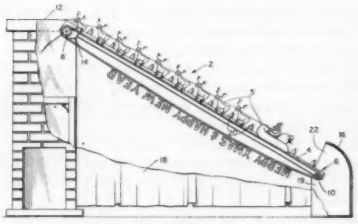
1. In combination an attachment for a tractor and said tractor, said attachment for said tractor secured to said tractor by a U-shaped framework, the two ends of said U-shaped framework pivotally attached to each side of said tractor, said attachment having a V-shaped mounting plate, a means for weeding, and a means for seizing trees, both of said means mounted on the V-shaped mounting plate, wherein the two ends of said V-shaped mounting plate are attached to the U-shaped framework wherein the vertex of the V-shaped mounting plate projects forward from said U-shaped framework;

said means for weeding comprising (1) a gaff, said gaff located at the vertex of the V-shaped mounting plate at the bottom edge of said V-shaped mounting plate and (2) a plurality of knives, said knives also arrayed along the bottom edge of the V-shaped mounting plate;

said means for seizing trees, comprising a rectangular framework, said rectangular framework comprising two parallel bars, a front lateral arm, and a cross beam, said front lateral arm disposed between two adjacent ends of said parallel bars, said front lateral arm equipped with lateral projections, said cross beam disposed between and attached to said parallel bars, and including

vertical support means, said vertical support means pivotally attached to the free ends of said parallel bars, said vertical support means also attached to the ends of said V-shaped mounting plate, said vertical supporting means acting to support said tree seizing means above said weeding means.

3,858,339
ANIMATED DISPLAY APPARATUS
Robert J. Short, 156 E. 117th St., Los Angeles, Calif. 90061
Filed Mar. 1, 1973, Ser. No. 336,998
Int. Cl. G09f *11/28*
U.S. Cl. 40—32 **4 Claims**



1. A display apparatus comprising:

a flexible continuous belt having a long dimension and a short dimension which is positioned transversely to said long dimension;

said belt being flexible in both its long dimension and short dimension and said belt being movably mounted on a drive roller and an idler roller for movement along said long dimension;

a plurality of display characters supported in an upstanding display position on a surface of said belt for movement with said belt;

a support member positioned in supporting relation to said belt, said support member having a slide member which slidably engages a surface of said belt to prevent sagging of said belt and side members which restrain said belt from movement in a direction transverse to said long dimension;

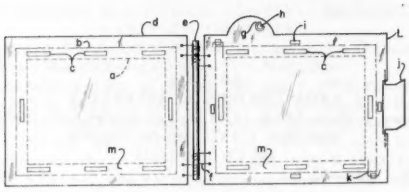
said display characters each including a foot which is affixed to a surface of said belt;

guide means positioned adjacent said belt and said rollers, said guide means including a slot having a width which is less than said short dimension with said slot positioned to contact said foot of each of said display characters in supporting the display characters in an upright position relative to the belt surface;

said display characters being inverted from a return position in which said characters depend downwardly from the belt surface to said display position as said belt passes over said idler roller; and

said guide means including converging surfaces positioned adjacent said belt and said idler roller with said converging surfaces leading to said slot and said converging surfaces positioned for contact with said feet of said display characters in guiding the display characters to an upright display position within said slot as said belt passes over said idler roller.

3,858,340
PICTURE HOLDER
Walter E. Melanson, 33 Boynton St., Boston, Mass. 02130
Continuation of Ser. No. 238,366, March 27, 1972, abandoned. This application Jan. 21, 1974, Ser. No. 434,809
Int. Cl. G09f *11/02*
U.S. Cl. 40—68 **1 Claim**



1. A photographic holder in combination with exposed photographic paper sensitized on one side within the confines of a border extending along the perimeter of said paper undergoing development comprising,

a plurality of transparent rectangular solid plate members,

clip means for holding developing photograph paper in spaced relation against a plate member of a cooperating pair of plate members,

said plate members having raised portions equally spaced along the perimeter extending normal to each said plate for engaging the border of said papers undergoing development,

hinge means for interconnecting adjacent edges of said cooperating pairs of plate members (so that) with said raised portion (are) in registration with each other whereby cooperating plate members may be opened and closed so that two developing photographic papers may be placed back to back to each other and held between said raised portions when said pair are hingedly closed,

clamp means for holding (said) each pair of plate members together,

one of (said) each plate member pair having extension means in the plane of the plate member with a hole therethrough normal to said plate member, and

pivot means extending through the holes of a group of cooperating pairs of plate members whereby any pair may be (seperated from and returned to) selectively rotated about the remaining pairs of the group at will for receiving two developing photographic papers and inspection of developing papers previously placed therein.

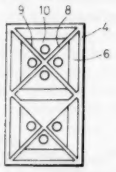
3,858,341
SEGMENT TYPE, ELECTRIC LIGHT FIGURE INDICATOR
Yasuo Wakabayashi, c/o No. F-191, Kamakura-Zushi, Highland No. 1362-293, Hisaki-machi, Zushi-shi, Kanagawa-ken, Japan
Filed Dec. 7, 1972, Ser. No. 312,983
Claims priority, application Japan, Dec. 8, 1971, 46-114890
Int. Cl. G09f *09/30*
U.S. Cl. 40—130 E **5 Claims**

1. A segment type, electric light alpha-numeric figure indicator, comprising:

a casing having seven flat compartments, each of said compartments having a cross-section in a lateral plane in the shape of a triangle, said triangle having an apex angle and a base side opposite said angle;

electric bulbs each housed in each of said compartments and located therein close to and in the apex angle of said triangle, the height or width of said electric bulb being slightly smaller than the depth of said casing;

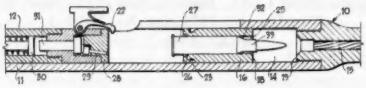
a cover plate covering the top opening of said casing and having elongated, confined mosaic openings therein, which permit light emanating from the electric bulbs to shine therethrough, each opening located parallel to and in front of the base side of said triangle and arranged so as to collectively form an alpha-numeric figure;



said compartments each having a reflecting wall inclined to said cover plate at an angle of about **30°** to **60°**, said inclined walls being located immediately behind said elongated, confined mosaic openings; all interior surfaces of said compartments having reflecting mirror surfaces; and

light diffusing means covering said mosaic openings.

3,858,342
HIGH POWERED RIFLE BREECH
Arthur William Langsford, 306 Morish St., Broken Hill, N.S.W., Australia
Filed Jan. 18, 1973, Ser. No. 324,888
Int. Cl. F41c *21/12*
U.S. Cl. 42—16 **7 Claims**

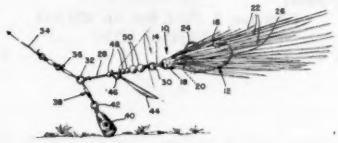


1. A rifle breech comprising a receiver, means for securing a barrel to extend forwardly of the receiver, a breech bolt slidable in the receiver from an open (loading) position to a closed (locked) position, a circular section recess in the receiver coaxial with the bore of the barrel but of larger diameter than said bore, an end face at the front end of the recess, and a cartridge container positionable in the recess and having its outer walls engaged by the walls of the recess but being extractable from the recess, the breech bolt urging the front end of the cartridge container into abutment with the recess end face when the bolt is in locked position, the cartridge container having a central bore extending the length of the container, the central bore having a diameter to retain a cartridge therein, the central bore having adjacent a rear end an internal taper which diverges rearwardly and terminates in a diameter greater than the diameter of and spaced from the walls of a cartridge to be contained in said central bore but less than the rim diameter of said cartridge, wherein between the central bore taper and cartridge wall there is formed an annular space adjacent to the cartridge rim.

3,858,343
FISHING APPARATUS
David L. Goforth, 613 Kemp Rd. West, Greensboro, N.C.
Filed Mar. 8, 1973, Ser. No. 339,424
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.17 **8 Claims**

1. Fishing apparatus adapted for casting and trolling comprising an elongated shaft means, spinner means rotatably carried by said shaft means, said shaft means being provided with a first line attaching means ahead of said spinner means and a second fishhook attaching means rearwardly of said

spinner means, fishhook means, having sufficient floatation to urge the fishhook means and spinner means upwardly, attached to said second attaching means of said shaft means, said fishhook means including a shank with an eyelet at one end and a hook bill and barb at the other end, a resilient deflector finger secured to said shank adjacent said eyelet and extending outwardly and rearwardly toward said barb, and weight means supported by said shaft means forwardly of and



in spaced relation to said spinner means, said weight means including a weight suspended below said shaft means for swinging movement relative to said shaft means and for maintaining the fishhook means adjacent the bottom of a body of water as the apparatus is drawn through the water, said weight being positioned below said spinner a distance sufficient to avoid interference of the spinner rotations with the weight and the bottom.

3,858,344

ANGLER'S LURES

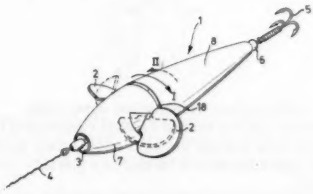
Peter J. Watts, Baldhu House, 38 Polkyth Rd., St. Austell, England

Filed July 31, 1973, Ser. No. 384,344

Claims priority, application Great Britain, Aug. 2, 1972, 35991/72

Int. Cl. A01k *85/00*

U.S. Cl. 43—42.05 **11 Claims**



1. An angler's lure comprising:

a. an elongate streamlined hollow body constituted by front and rear parts which are relatively rotatable about the longitudinal axis of the body;

b. means defining two pairs of overlapping apertures in the two body parts on opposite sides of the body;

c. two fins projecting laterally from the body, the fins having respective root portions which pass through the respective pairs of over-lapping apertures in the body parts, said root portions having enlarged heads which are located within the hollow lure body and which render the fins captive in said apertures, the fins being rotatable in said apertures about transverse axes perpendicular to the longitudinal axis of the body upon relative rotation of the body parts, said fins having two respective stable limit positions in which they are inclined to the said longitudinal axis and respectively arranged to cause rotation of the lure in opposite respective directions about said axis upon flow of water over the lure body in a given direction parallel to said longitudinal axis, and

d. resilient biasing means within said lure body urging the two body parts apart to bias the fins into the two said stable limit positions selectively.

3,858,345

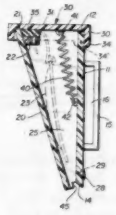
FISHING TACKLE BOX

Raymond J. Ziegler, 16185 W. 14th Pl., Golden, Colo. 80401

Filed Oct. 29, 1973, Ser. No. 410,525

Int. Cl. A01k *97/06*

U.S. Cl. 43—57.5 R **7 Claims**



1. A fish tackle box comprising

a. a flat front panel,

b. opposite generally triangularly shaped end panels projecting from the front panel with a wide end thereof facing upwardly,

c. a rear panel to which the end panels are pivotally attached at their lower ends with the front panel sloping downwardly toward the rear panel,

d. a cover hingedly attached to the rear panel engaging the upper part of the front panel in closed position, said front and end panels moving pivotally downwardly and outwardly by gravity relatively to the rear panel when the cover is moved manually to disengage it from the front panel and open the box when the rear panel is supported substantially upright.

3,858,346

CONTROL OF SUBTERRANEAN TERMITES

Floyd Leroy Bailey, Jackson, Miss., assignor to Allied Chemical Corporation, Morristown, N.J.

Filed Jan. 29, 1973, Ser. No. 327,340

Int. Cl. A01m *1/02, 1/20*

U.S. Cl. 43—124 **3 Claims**

1. A method of controlling subterranean termites in buildings of the type having floors suspended above the ground by means of wooden floor joists, which comprises the following steps:

a. spraying the surface of the floor joists with a termiticidal solution of hexachlorocyclopentadiene dimer in a solvent carrier selected from the group consisting of benzene, kerosene, carbon tetrachloride, acetone and ethyl alcohol, said solution containing 0.01 to 1 percent of hexachlorocyclopentadiene dimer, based on the weight of the solvent, said solution being applied to the surface of the floor joists at the rate of about 1 gallon of solution per 100 to 200 square feet of said surface;

b. preparing a bait for said termites consisting of a mixture of sawdust, 0.01 to 1 percent of hexachlorocyclopentadiene dimer, based on the weight of said sawdust, and 1 to 10 percent of wood in a state of incipient decay, based on the weight of said sawdust; and

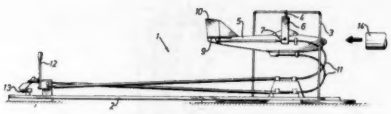
c. burying a termiticidally effective amount of said bait in holes in the ground under said building, said holes being spaced at intervals of 0.5 to 3 yards, with about 10 to 20 grams of said bait being buried in each hole.

3,858,347

MODEL FLIGHT SIMULATOR

John Gerhard Horn, Taby, and John A. Melin, Malmo, both of Sweden, assignors to Arbman Development AB, Stockholm, Sweden

Filed May 25, 1973, Ser. No. 364,169
Claims priority, application Sweden, Feb. 20, 1973, 73023756
Int. Cl. A63h *27/04*
U.S. Cl. 46—76 **5 Claims**



1. A model flight simulator comprising:

1. a model airplane having movable steering means for simulating airplane manoeuvres;
2. a horizontal transverse bearing axle defining an axis which runs approximately through the centre of gravity of the model airplane;
3. a yoke-shaped member connected to the bearing axle;
4. a wire connected to the yoke-shaped member to serve as a vertical axis for the model airplane; and
5. control means for operating the movable steering means on the model airplane from a place outside the airplane, whereby the model airplane may be suspended by means of the wire and an operator of the model flight simulator may control the orientation of the model airplane with respect to a vertical and a horizontal axis on the model airplane while the airplane is subjected to an air current.

3,858,348

ROTATABLE BOBBIN AND TETHERED SPINNING OBJECT

Paul L. Brown, 982 Lakeview Way, Redwood City, Calif. 94062

Continuation-in-part of Ser. No. 219,776, Jan. 21, 1972, Pat. No. 3,834,069. This application Nov. 19, 1973, Ser. No. 417,291
Int. Cl. A63h *1/32*
U.S. Cl. 46—61 **7 Claims**

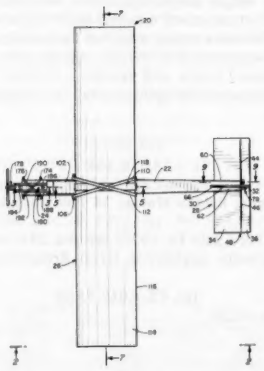
1. In a flight-controlled toy, a rotatably mounted bobbin comprising opposed flanges of which one flange has a central opening therein and a radial slot therein communicating with said central opening and extending through the periphery thereof, a cord attached at its one end to said bobbin and windable thereon, said cord being adapted to be slipped through said radial slot into said central opening of said one flange, and an object secured to the other end of said cord.

3,858,349

MODEL AIRPLANE CONSTRUCTION

William Duane McClendon, 5063 Mt. Royal Dr., Los Angeles, Calif. 90041

Filed Jan. 2, 1974, Ser. No. 429,919
Int. Cl. A63h *27/00*
U.S. Cl. 46—76 **9 Claims**



1. A model airplane construction comprising:

a basically channel shaped fuselage constructed from cardboard, said fuselage having a nose section and a tail section, said nose section formed of a plurality of cardboard layers;

a wing connected to said fuselage, the upper and lower outer surfaces of said wing constructed of a single cardboard sheet folded over upon itself, said wing including a dihedral angle, said wing having a right side and a left side, said wing having an internal cardboard brace extending substantially the entire length of said wing, a first rigid strip of material fixed to said cardboard brace within said right side of said wing, a second strip of rigid material fixed to said cardboard brace within said left side of said wing, a third strip of material attached to both said first and said second strips of material.

3,858,350

FLUTTERING AERIAL TOY

William Lux, 8510 Wilksboro Ln., Potomac, Md. 20854

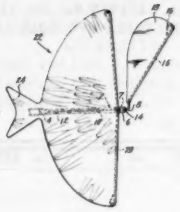
Filed Oct. 25, 1973, Ser. No. 409,378
Int. Cl. A63h *27/00*
U.S. Cl. 46—78 **7 Claims**

1. An aerial toy comprising:

a longitudinal frame member having sheet material wings extending laterally therefrom;

propelling means journalled on said frame on a fore-and-aft axis and including a propellor member extending out-

wardly of said axis with its center of pressure and center of gravity eccentric to said axis and means for rotating the



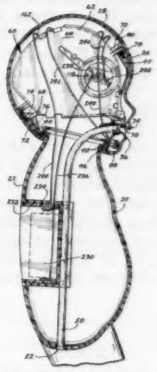
same whereby, in flight, said toy follows a sinuous path simulating that of a natural creature in flight.

3,858,351
FIGURE TOY INJURY-SIMULATING APPARATUS AND METHOD
Irwin C. Porter, Quinter, Kans., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Oct. 3, 1973, Ser. No. 403,235
Int. Cl. A63h *13/00*
U.S. Cl. 46—116 **2 Claims**

1. A method of simulating an injury on a figure toy and the subsequent healing of the injury comprising the steps of:
adhering an adhesive-coated, injury-simulating patch to said figure toy;
adhering an adhesive-coated simulated bandage to said figure toy and to and over said injury-simulating patch with greater adhesive force than that with which said patch is adhered to said figure toy; and thereafter
removing said simulated bandage from said figure toy, said injury-simulating patch adhering to said figure toy less tenaciously than to said simulated bandage, whereby said injury-simulating patch will adhere to said simulated bandage and will be removed from said figure toy when said simulated bandage is removed.

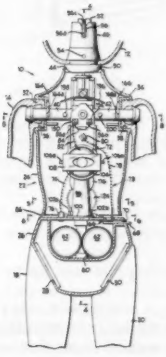
3,858,352
DOLL WITH INGESTION SYSTEM
Charles A. Cummings, and George P. Giordano, both of Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.
Filed Oct. 15, 1973, Ser. No. 406,504
Int. Cl. A63h *13/02*
U.S. Cl. 46—141 **14 Claims**

1. A toy figure comprising a body member having a head attached thereto, a movable mouth in said head, tubular means within said body for connecting said mouth to a discharge opening in said body, actuating means within the toy, at least a portion of which contacts said tubular means, for creating a peristaltic action in the tubular means whereby material placed in the mouth is extruded through said tubular



means and through the discharge opening, and means for energizing said actuating means.

3,858,353
ANIMATED DANCING DOLL
Marvin I. Glass, and Rouben Terzian, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 29, 1973, Ser. No. 327,304
Int. Cl. A63h *33/26*
U.S. Cl. 46—247 **14 Claims**



1. An animated doll, comprising:
a lower torso portion having legs connected to the base thereof;
an upper torso portion having arms connected thereto, said upper torso portion being mounted on the lower torso portion for movement relative thereto about a generally horizontal axis extending through the upper torso portion and spaced upwardly from the top of the lower torso portion when the doll is in an upright position; and
drive means operatively associated between said upper and lower torso portions for effecting said relative movement therebetween.

3,858,354

ACTIVATING COMPOSITION FOR THE TAPPING OF TREES

Patrick Marie Alfred Soulard, Talence, France, assignor to Societe D'Interet Collectif Agricole Des Sylviculteurs Du Sud-Ouest (S.I.C.A.S.S.O.), Bordeaux, France

Division of Ser. No. 305,282, Nov. 10, 1972, abandoned. This application Oct. 4, 1973, Ser. No. 404,631

Claims priority, application France, Nov. 25, 1971, 71.42229

Int. Cl. A01g *23/10*

U.S. Cl. 47—10 11 Claims

1. Process for activating the tapping of trees, particularly of live trees of the Pinus family, consisting of applying on notches formed in the trees an activating composition comprising, by weight, 5–60 parts, based on dry material, of a lignosulfite selected from the group consisting of the alkali metal, alkaline-earth metal and ammonium lignosulfites and 24-93 parts, calculated as H_2SO_4, of an aqueous sulfuric acid having a H_2SO_4 concentration of from about 30 to about 94 wt. percent.

3,858,355

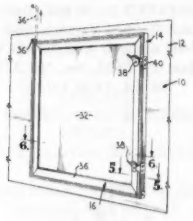
AIR DUCT ACCESS DOOR

James R. Root, Independence, Mo., assignor to Ruskin Manufacturing Company, Grandview, Mo.

Filed Feb. 16, 1973, Ser. No. 332,990

Int. Cl. E05f *11/12*

U.S. Cl. 49—363 5 Claims



1. Closure structure to be disposed over and secured along the perimeter of a window in a wall for providing access to the other side of the wall, said structure comprising:

a frame member adapted to be positioned to surround said window on one side of said wall;

a door coupled with the frame member and movable with respect to the latter between an open and a closed position;

lock means for holding said door tightly against said frame member;

a plurality of flanges integral with said frame member and projecting from the latter on the other side of said wall when the frame member is in position,

said flanges being characterized by a plurality of perforations disposed in linear alignment with each other and substantially aligned with said other side of the wall and interrupted by a plurality of integral portions of said flanges disposed between adjacent perforations,

said flanges being manually bendable through an arc of approximately 90° along the line presented by said perforations to a position in contact with said wall on said other side thereof;

a first sealing strip secured to said frame member for forming a seal between the member and said one side of said wall; and

a second sealing strip secured to said frame member for forming a seal between said door and the frame member.

3,858,356

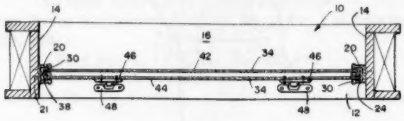
SASHLESS WINDOW STRUCTURE

Reinhold W. Gross, Milwaukee, Wis., assignor to S. C. Johnson & Sons, Inc., Racine, Wis.

Filed Feb. 14, 1973, Ser. No. 332,452

Int. Cl. E05d *15/16*; E06b *3/02*

U.S. Cl. 49—413 7 Claims



1. A sashless window structure for mounting within a box frame of the type including two opposing side surfaces, a sill surface, and an upper surface, said structure comprising: a track member mounted upright to each of said opposing side surfaces, each of said members having an elongated, substantially flat base strip one surface of which is affixed to one of said side surfaces respectively, a multiplicity of elongated, resilient flat finger strips mounted lengthwise along the opposite surface of said base strip in parallel spaced relationship and in generally normal relationship to said base strip, adjacent pairs of said finger strips defining channels therebetween, said finger strips being of substantially equal width, and means on said free edges for supportingly gripping sashless window panes, said means comprising enlargements along said free edges, said enlargements along adjacent pairs of said free edges forming pane-gripping pairs which have a normal spacing therebetween and which, by virtue of the resiliency of said finger strips, are free to be biased to a greater spacing; and at least one window pane having one pair of its opposite edges mounted one edge respectively in one channel of each of said track members, the distance between said opposite edges being less than the distance between said base strips of said two mounted track members, said at least one window pane being of thickness greater than said normal spacing.

3,858,357

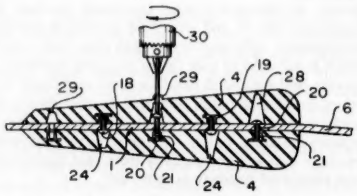
BUMPER MOUNTING FOR FLEXIBLE TRAFFIC DOOR

Winston B. McGuire, Plattsburgh, N.Y., assignor to W. B. McGuire Co., Inc., Hudson, N.Y.

Filed June 5, 1973, Ser. No. 367,246

Int. Cl. E05b *1/00*

U.S. Cl. 49—460 6 Claims



1. A door having intermediate the ends thereof a pair of resilient bumpers fixedly located opposite each other on each side of the door, each of said bumpers including at least one threaded first recess extending partially therethrough from the face thereof in contact with the door and receiving the threaded end of bolts extending through the door, each of said bumpers containing at least one second recess extending partially therethrough from the face thereof in contact with the door and dimensioned to accommodate the head of said bolts, the thickness of material between each second recess and the respective faces of the bumpers remote from the door being such as to allow penetration therethrough of a driving

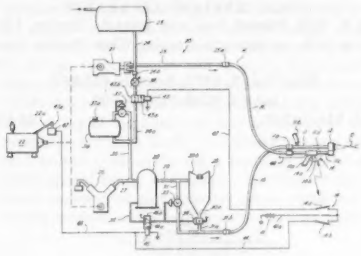
tool for causing said bolts to enter said threaded recesses in the respective other of said bumpers.

3,858,358

HIGH PRESSURE LIQUID AND ABRASIVE CLEANING APPARATUS

John E. Stachowiak, and John B. Goss, both of Houston, Tex., assignors to American Aero Industries, Inc., Houston, Tex.

Filed Jan. 2, 1973, Ser. No. 320,279
Int. Cl. B24c *3/00*
U.S. Cl. 51—8 **4 Claims**



1. A liquid-abrasive cleaning apparatus, comprising:
a blasting nozzle for separately directing liquid and a gas-abrasive mixture exclusive of any liquid outwardly toward an object for cleaning same;
a liquid supply connected with said nozzle and liquid pump means for pumping said liquid outwardly of said blasting nozzle at a high blast pressure;
a gas supply and an abrasive supply connected with said nozzle, and compressor means for mixing abrasive with gas and for pumping a gas-abrasive mixture outwardly of said blasting nozzle at a lower pressure than said high blast pressure; and
said blasting nozzle including a central, low pressure, nozzle portion in fluid communication with said gas-abrasive mixture, said gas-abrasive mixture being directed outwardly of said central nozzle portion in a low-velocity stream; and
said blasting nozzle further including a plurality of circumferentially spaced, high pressure nozzle portions positioned about said central nozzle portion, each of said circumferentially spaced nozzle being in fluid communication with said high pressure liquid and directing outwardly, separately from said gas-abrasive mixture, high velocity liquid toward said low-velocity, gas-abrasive stream whereby said gas-abrasive mixture is propelled to said object with said high-velocity blasting water.

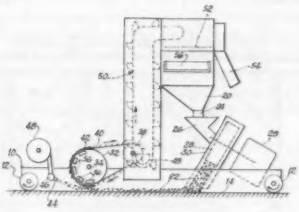
3,858,359

MOBILE SURFACE TREATING APPARATUS

Raymond M. Leliaert, South Bend, Ind., assignor to Wheelabrator-Frye, Inc., Mishawaka, Ind.

Filed Jan. 10, 1974, Ser. No. 432,353
Int. Cl. B24c *3/06*
U.S. Cl. 51—9 **12 Claims**

1. In a mobile apparatus for surface treatment with ferromagnetic particulate material, an enclosure having an open bottom side through which the surface to be treated is exposed, means mounting the enclosure for movement over the surface, projecting means within the enclosure for directing particulate material through the open bottom side onto the surface to be treated, means for removal of spent ferromagnetic particulate material from the surface, and means for recovering reusable particulate material; the improvement wherein the means for removal of spent particulate material from the surface comprises:
air jets positioned to direct an air stream at the surface to elevate the particulate material slightly above said surface;



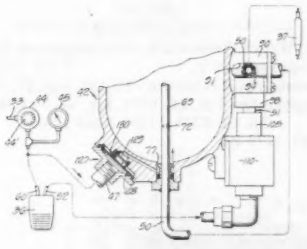
means for magnetically attracting the elevated particulate material; and
belt means for transferring the attracted particulate material to the beams for recovering.

3,858,360

PNEUMATIC ABRASIVE CUTTING APPARATUS

Meyer Piet, Arcadia, Calif., assignor to Futurecraft Corporation, Industry, Calif.

Continuation-in-part of Ser. No. 194,194, Nov. 1, 1971, Pat. No. 3,815,286. This application Apr. 11, 1973, Ser. No. 350,084
Int. Cl. B24c *7/00, 3/06*
U.S. Cl. 51—12 **17 Claims**

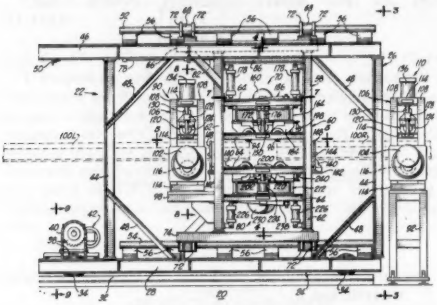


1. Abrasive cutting apparatus, comprising:
a. a source of pressurized fluid;
b. an assembly comprising a reservoir containing an abrasive substance, said reservoir having an inlet connectable with said source and being positioned to discharge fluid into said abrasive substance in a bottom portion of said reservoir, and outlet means including a fluid flow passage in a tubular member, a portion of said tubular member being positioned in a top space of said reservoir, and an inlet opening in said tubular member for admission of the abrasive substance into said fluid flow passage;
c. discharge nozzle means connected with said outlet means;
d. valve means for controlling flow to said discharge nozzle; and
e. restrictor means at said reservoir inlet for permitting fluid flow axially therethrough in opposite directions, while opposing flow of said abrasive substance.

3,858,361
RAIL GRINDING MACHINE

Stephen G. Behne, Janesville, Wis., assignor to Chemetron Corporation, Chicago, Ill.

Division of Ser. No. 239,293, March 29, 1972, Pat. No. 3,818,650. This application Jan. 17, 1974, Ser. No. 434,201
Int. Cl. B24b *1/00, 46/01, 7/00*
U.S. Cl. 51—80 R **12 Claims**

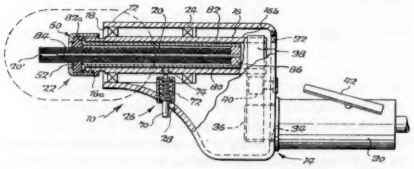


1. Apparatus for grinding surfaces adjacent the ends of rail sections to be welded together comprising clamping means for holding said sections in end-to-end longitudinal alignment; abrasive grinding means comprising a plurality of abrasive wheels mounted side by side on a common axle and driven to rotate around an axis of rotation extending laterally transverse of said rail sections at an acute included angle relative to the longitudinal axis thereof; carriage means for moving said grinding means longitudinally of said rail section toward and away from an end thereof and pressure means for moving said grinding means normal to said axis of rotation thereof toward and away from surfaces on said rail sections into and out of grinding engagement therewith as said grinding means moves toward said end.

3,858,362
DIE GRINDER

Walter N. Welsch, Tonawanda, N.Y., assignor to Dynabrade, Inc., Tonawanda, N.Y.

Continuation-in-part of Ser. No. 391,686, Aug. 27, 1973,. This application Feb. 21, 1974, Ser. No. 444,342
Int. Cl. B24b *23/00;* **B24d** *11/00*
U.S. Cl. 51—170 PT **10 Claims**



1. In a grinding tool adapted for use with a grinding element having an end adapted to be progressively worn away by engagement with a workpiece during operation of said grinding tool, said grinding element being characterized as having an elongated generally cylindrical configuration with a co-axially extending opening, the combination comprising:

a rotatably supported drive tube, said drive tube being dimensioned to freely accommodate said grinding element therewithin to removably extend through a front end thereof;

a mandrel supported to extend co-axially within said drive tube and having a front end portion disposed forwardly of said front end, said mandrel conforming to said grinding element opening, whereby to permit said grinding element to be slideably supported on said mandrel within said drive tube;

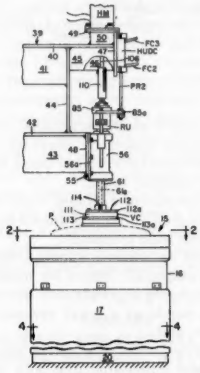
means for rotating said drive tube; and

locking means carried by said front end for releasably clamping said grinding element intermediate opposite ends thereof for rotation with said drive tube, whereby said end of said grinding element normally projects forwardly of said front end beyond said locking means and beyond said front end portion during operation of said tool.

3,858,363
EDGE BEVELING APPARATUS

Burton A. Noll, Painted Post, and Jorge L. Torrico, Lindley, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 7, 1973, Ser. No. 422,882
Int. Cl. B24b *9/00, 17/00*
U.S. Cl. 51—105 R **13 Claims**



1. Apparatus for beveling the annular sealing edge of a rectangular or generally elliptical television picture tube viewing panel member or funnel member, such apparatus comprising, in combination;

I. a plurality of at least three similar, relatively long and circularly cylindrical spaced-apart rollers rotatably mounted on an upper surface of a generally horizontally extending support with first ends of such rollers generally equally spaced from a selected vertical axis extending generally normal to said support and the axes of rotation of the rollers perpendicular to said axis and in a common horizontal plane with each other;

II. means for rotatably supporting one of said picture tube members above said rollers with the annular sealing edge thereof depending, said supporting means being actuable to vertically move said member and, thereby, said sealing edge into and out of contact with the outer peripheries of said rollers;

III. a grinding wheel and associated first rotary motor means for driven rotation of such wheel, such wheel and motor means supported on a first end of a generally horizontal support arm whose second end is pivoted for generally horizontal swinging movement of the arm in first and second opposite directions and, thereby, the grinding surface of said grinding wheel into and out of contact, respectively, with a border of the sealing edge of a picture tube member when such edge is in contact with said outer peripheries of said rollers;

IV. means for force biasing said support arm in said first direction of swinging movement;

V. first reciprocative motor means for moving said arm in said second direction of swinging movement against the force of said force biasing means and permitting movement of said arm in said first direction according as such motor means are energized in first or second modes, respectively;

VI. second rotary motor means for driven rotation of said member supporting means and a tube member supported thereby;

VII. second reciprocative motor means for vertically moving said member supporting means and a supported tube member and, thereby, said annular sealing edge of such member into and out of contact with said outer peripheries of said rollers according as such motor means are energized in first and second modes, respectively; and

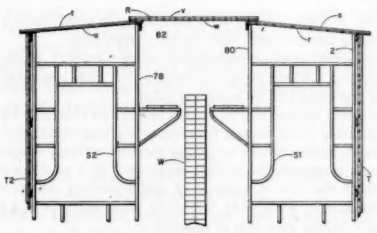
VIII. means, responsive to said swinging movement of said support arm, for regulating rotational speed of one of said rotary motor means to maintain a generally uniform rate of beveling of the border of said sealing edge of a tube member when such border is contacted by said surface of said grinding wheel during a beveling operation, such uniform rate being maintained regardless of the varying linear location of such grinding wheel along said border during rotation of the tube member and its sealing edge.

3,858,364

PROTECTIVE TEMPORARY WALL AND ROOF STRUCTURE

Leo R. Proulx, 66 Cypress St., Manchester, N.H.

Filed Apr. 27, 1973, Ser. No. 355,071
Int. Cl. E04b *1/40, 2/28;* **E04g** *7/00*
U.S. Cl. 52—127 **1 Claim**



1. A demountable temporary structure for use in protecting a building unit therewithin against the weather,

said temporary structure comprising at least first and second walls located adjacent different sides of said unit, and a roof extending from one wall to the other to cover the space therebetween,

each of said walls comprising a succession of horizontally spaced vertical elements aligned generally parallel to the adjacent building unit,

vertically spaced horizontal members demountably mounted on said vertical elements by detachable clamping means,

the spaces between said vertical elements and said horizontal members being closed by a succession of rectangular wall panels of rigid sheet material,

each said wall panel overlappng those adjacent panels that are below and above and to each side,

each said wall panel having a plurality of small holes therethrough located adjacent said horizontal members,

each said wall panel being demountably held in position against the panels which it overlaps and against said horizontal members by a plurality of removable tension elements, each of which has one end connected to a wall panel and the other end connected to one of said horizontal members,

some of said horizontal members being demountably connected to said vertical elements by detachable clamping means at positions adjacent the upper ends of said vertical elements and adjacent the upper edges of the uppermost wall panels,

a plurality of rectangular roof panels of rigid sheet material extending across and closing the overhead space between said walls, each said roof panel overlapping adjacent roof panels and the remote portions of said roof panels being connected to the uppermost horizontal members,

each of said roof panels having a plurality of small holes there through adjacent the said uppermost horizontal members,

each of said roof panels being demountably held in position against the roof panels which it overlaps and secured to the said uppermost horizontal members by a plurality of removable tension elements each of which has one end connected to a roof panel and the other end connected to one of said uppermost horizontal members,

each said tension element for holding said wall and roof panels in position comprising an extensible member having means on one end connectable to a wall or roof panel by manual insertion through one of said small holes in the panel from the interior side thereof to make holding engagement with the exterior surface of the panel adjacent said hole,

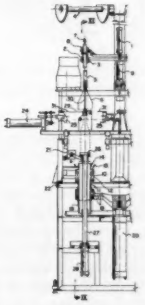
each said extensible member having means on the other end connectable to a horizontal member, and means intermediate the two said ends of said extensible member for urging the said ends toward each other whereby each said wall and roof panel will be firmly pulled against the adjacent panels and against said horizontal members.

3,858,365

MACHINE FOR COVERING BOTTLES AND OTHER CONTAINERS WITH NETTING

Cesar Alvarez Fernandez, Madrid, Spain, assignor to Fernando A. De Terry, S. A., Puerto De Santa Maria (Cadiz), Spain

Filed July 19, 1973, Ser. No. 380,684
Int. Cl. B65b *9/10*
U.S. Cl. 53—138 R **8 Claims**



1. A machine for covering bottles and other containers with netting, comprising:

an upper storage drum holding a supply of tubular netting in collapsed flat form;

netting feed means below said drum and including a vertical rod cooperating with a reciprocable thrust means for

receiving said netting from said drum and feeding said netting in a downwardly direction about said rod;

a generally conical shaped expander device having its apex adjacent the lower end of said rod thereby causing said netting to expand radially as it is fed over said rod and said expander device;

a mechanism independently reciprocable with respect to said expander device for drawing the netting around said container, said drawing mechanism including clamping means to grasp netting hanging down below said expander device when said drawing mechanism is in an elevated position and for pulling said netting around the length of said container to a position below said container when said drawing mechanism is moved to a lowered position; means for stapling and cutting the upper and lower extremities of the netting above and below said container, respectively;

a support mechanism for the container to be covered with netting; and

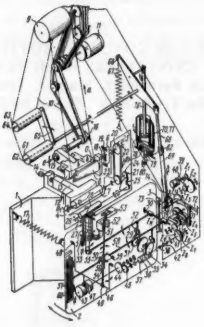
an automatic mechanism for the entry of bare containers and the exit of containers covered with netting for subsequent handling.

3,858,366

BAND GRINDING TOOL FOR ROUNDING EDGE PORTIONS OF BLADES FOR COMPRESSOR AND TURBINE PLANTS

Ilia Lvovich Tashker, ulitsa Kalinina, 2, kv. 8, Ufa, U.S.S.R.

Filed Jan. 2, 1973, Ser. No. 320,587
Int. Cl. B24b *21/16*
U.S. Cl. 51—144 **4 Claims**



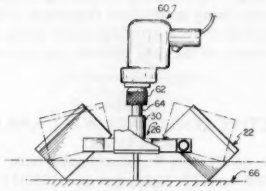
1. A band grinding tool for rounding the edge portion of workpieces, such as blades for compressor and turbine plants within a grinding area comprising: a bed; a mechanism for moving a grinding band installed on said bed; a device for fastening the workpiece to be machined and for feeding it to the grinding area, the device being installed on said bed; a support cam located in said bed retaining the grinding band in the area of machining the blade during the course of grinding, means performing reciprocating motions to said support cam to accomplish interrupted grinding; said device for fastening the workpiece to be machined and for feeding it to the grinding area comprising a movable head with an attachment for fastening the workpiece and a tool profile; a support mounted on said bed including means for moving in the direction of the transverse feeding of the workpiece and carrying said movable head, the support being connected through an elastic link to said bed; a profile cam mounted on the said bed; a drive for effecting synchronous movement of said attachment for fastening the workpiece and of the tool profile, the drive imparting angular feeding movement to the workpiece; said tool profile being constantly pressed against said profile cam to accomplish the transverse feeding of the workpiece, said drive including means to form a longitudinal traverse of the said tool profile toward the surface of the said profile cam, said last-mentioned means rocking said head with respect to said support through a movable link therebetween for the longitudinal traverse of the workpiece edge with respect to the grinding band.

3,858,367

ABRADING DEVICE

Jack W. Whitsett, 936 Castile Ave., Coral Gables, Fla. 33134

Filed Sept. 10, 1973, Ser. No. 395,971
Int. Cl. B24b *9/02;* **B23d** *79/08*
U.S. Cl. 51—332 **12 Claims**



1. An abrading device adapted for use in combination with a rotating drive means, said device comprising:

at least two axially elongated abrading members, each comprising a blade portion having a first end, a second end, a top edge and an abrading edge;

mounting means, rigidly connected to and rotatable by said rotating drive means, for supporting said members,

said mounting means including means for freely supporting said members for pivotal movement at a position offset from the axis of rotation of said mounting means about fixed axes, each lying in a plane perpendicular to a plane containing said axis of rotation;

said mounting means having an axis of rotation coincident with the axis of rotation of said rotating drive means,

said means for freely supporting said members including rods secured to said mounting means along said axes, and

mounting apertures each located in one of said blade portions between said first end and the midpoint between said first and second ends,

said mounting apertures each having a diameter larger than said rods and each of said rods passing through one of said apertures,

said means for freely supporting said members also supporting said abrading edges in non-coplanar planes when said drive means is not rotating, said edges forming with a plane containing said mounting means dihedral angles of less than 180°;

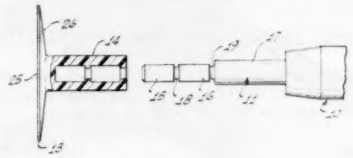
said means for freely supporting said members also supporting said abrading edges at an angle to the plane of said mounting means which is greater than said dihedral angles when said rotating drive means is operated so said abrading edges describe a conical surface;

said device being operative to accomplish abrading by engaging at least a portion of said abrading edges against an object as said members rotate to thus cause said edges to abrade said object.

3,858,368
DISPOSABLE QUICK COUPLING ROTARY GRINDING DISC FOR COMPOUNDLY CURVED SURFACES

Francis E. Cocherell, 470 W. Badillo Ave., Covina, and Warren F. Frinchaboy, 3981 Garfield, Carlsbad, both of Calif.

Filed Sept. 14, 1973, Ser. No. 397,261
Int. Cl. B24d *17/00*; **A61c** *3/06*
U.S. Cl. 51—358 **8 Claims**



1. A unitary, disposable, grinding disc and quick coupling sleeve comprising:

a disc having a forward face and a rear face and having a coupling sleeve formed as a coaxially rearwardly extending projection on said rear face;

said disc having an imperforate forward face of circular area disposed at substantially 90° to the axis of said sleeve;

said sleeve being of cylindrical external surface configuration and including an angle of 90° to 100°, approximately, relative to said rear face;

said rear face comprising an annular area whose outer diameter is at least double that of said sleeve and substantially coincident with the outer diameter of said forward face;

said disc and sleeve being made of a flexible material such that said disc, outwardly of said sleeve, is deformable to transiently conform to compoundly curved surfaces on which said disc is rotating;

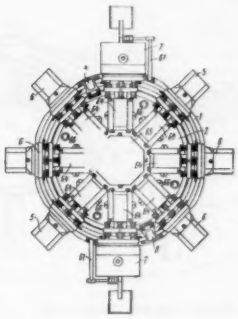
said sleeve being internally formed with an axially extending blind hole that opens into the rear end of said sleeve for drivably receiving one end of a driving arbor.

3,858,369
MACHINE FOR MULTIPLE GRINDING OF SEMICONDUCTOR

Valentin Mikhailovich Dolgov, ulitsa Ljublinskaya, 23, kv. 21; Vyacheslav Vasilievich Saveliev, Anadyrsky proezd, 67, kv. 48; Vladimir Konstantinovich Krylov, Yaroslavskoe shosse, 131, kv. 3; Valentin Mitrofanovich Tomashevsky, 3 Mytischinskaya ulitsa, 14a, kv. 140, and Evgeny Ivanovich Zolotarev, ulitsa Kibalachicha, 15, kv. 12, all of Moscow, U.S.S.R.

Filed Nov. 8, 1972, Ser. No. 304,834
Int. Cl. B24b *7/04*
U.S. Cl. 51—5 B **5 Claims**

1. A machine for the simultaneous machining of a plurality of semiconductor blanks, comprising: a bed; a turn table mounted on said bed for moving in a circle; machining heads, including cutting-off, grinding and polishing heads, fixed about said table at identical angular spaces from one another, the operative part of each of said heads having means for oscillating about a first axis radially relative to said table and means for rotating about a second axis radially relative to said table; said means for imparting oscillating motion to each of said heads comprising link gears with a shaft secured to said bed; carriages with chucks to carry blanks, said carriages being mounted on said table at identical spaces from one another corresponding to the angular space between said heads, and means to impart reciprocating motion to said carriages toward said cutting-off heads in a radial direction, said reciprocating means being mounted on each of said carriages; means to rotate said chucks with blanks in the course of machining; a pusher attached to each of said carriages to feed the blanks in the opertive position to said cutting-off heads; and means to convey the cut-off portions of said

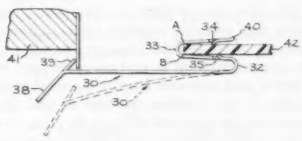


blanks, said conveying means being mounted in each of said cutting-off heads.

3,858,370
RETAINER CLIP AND CLOSURE MEANS

Richard J. Halstead, Chesapeake, Va., assignor to General Electric Co., Portsmouth, Va.

Filed Aug. 10, 1971, Ser. No. 170,560
Int. Cl. F16b *2/20*
U.S. Cl. 52—760 **3 Claims**



1. Fastening means for releasably coupling first and second planar members in substantially parallel planes, said fastening means including:

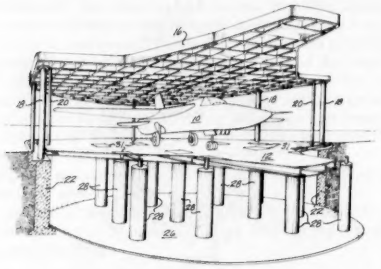
a first end of a generally S-shaped configuration comprising first, second and third substantially parallel, spaced portions, said first and second portions defining a first channel opening in a first planar direction and said second and third portions defining a second channel opening in an opposite planar direction, said first channel including at least two upstanding teeth extending from lower and upper confronting surfaces of said first and second portions respectively for engaging said first planar member upon insertion thereof into said first channel;

a second end comprising an extension of said third portion and being disposed in a plane substantially parallel to said first channel, said second end extending substantially beyond said first end and including detent means extending upwardly from a surface thereof and being inclined toward said first end for engaging said second member to prevent axial separation from said first member and further including a ramp-like surface extending oppositely from said second end to facilitate the engagement of said detent means with said second member.

3,858,371
HARD FLUSH AIRPLANE SHELTER

Robert L. Averill, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 13, 1974, Ser. No. 442,288
Int. Cl. E04b *7/16*
U.S. Cl. 52—66 **3 Claims**



1. A shelter for an airplane comprising:

a. a fixed floor;

b. a substantially vertical wall disposed about the perimeter of said fixed floor, said wall defining an enclosure wherein the airplane can be placed without any member of the airplane extending above the top of said wall;

c. a plurality of fixed support columns attached to said fixed floor, said support columns being disposed to pass alongside the members of the airplane when the airplane is in the enclosure while being substantially equally dispersed over said fixed floor;

d. a movable roof so shaped as to be supportable about its periphery by the top of said substantially vertical wall and additionally supportable by the tops of said support columns when said movable roof is resting upon the top of said substantially vertical wall;

e. a movable floor above said fixed floor, below said movable roof, and within said enclosure, said movable floor being located a sufficient distance below said movable roof to allow the airplane to be placed between said movable roof and said movable floor, said movable floor containing holes for the passage therethrough of said fixed support columns as said movable floor is moved up and down, said movable floor being so shaped and movable that in one position the tops of said fixed support columns will be disposed sufficiently close to the surface of said movable floor to allow the airplane to be moved onto and off of said movable floor;

f. means for connecting said movable roof to said movable floor such that said movable roof and said movable floor will move up and down in combination; and

g. means for moving said movable roof and said movable floor up and down in combination.

3,858,372
DEMOUNTABLE BUILDING

Pryce Wilson, 370 Drouin Dr., Rio Vista, Calif. 94571

Continuation of Ser. No. 215,034, Jan. 3, 1972, abandoned. This application Oct. 15, 1973, Ser. No. 406,556
Int. Cl. E04b *1/32*
U.S. Cl. 52—81 **9 Claims**

1. A plurality of individual detachably interlocking panels, said panels forming in combination a demountable modular dwelling structure, each of said panels comprising:

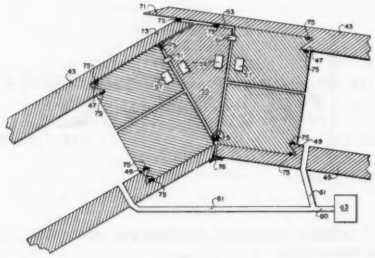
a. at least three framing members joined end-to-end to define a framework;

b. each of said framing members having a cutaway part and an overhang part at each end, said cutaway part at one end of one of said members mating with said overhang part at the end of an adjacent joined one of said members to form an overlapping joint;

c. each said overhang part including an elongated recess to form a cavity within said overlapping joint;

d. pin means mating with said cavity for restraining lateral movement between said overhanging parts forming said overlapping joint;

e. a set of grooves, one of said set of grooves being disposed in each of matched sides of at least two said members forming said framework, said set of grooves defining an



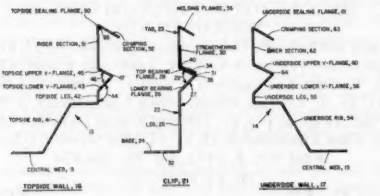
enclosure shaped similar to said framework but of lesser size; and

f. a siding sized to conform with the dimensions of said enclosure, each edge of said siding being mating with and locking within the respective one of said set of grooves; whereby, said panel is formed of a plurality of interlocking frame members rigidly retained in angular relationship with one another by said overlapping joints and said keyed siding.

3,858,373
METAL ROOF CLIPS

Donald L. Day, Guysville, Ohio; Charles H. Halstead, Parkersburg, W. Va., and Neil F. Huck, Lowell, Ohio, assignors to Textron, Inc., Providence, R.I.

Filed Dec. 11, 1972, Ser. No. 313,754
Int. Cl. E04d *3/362, 3/364*
U.S. Cl. 52—713 **7 Claims**



1. A metal roof hold-down clip assembly to be sandwiched between abutting walls of a pair of adjacent roof panels in a concealed manner for holding the panels on the roof supporting structure, the assembly comprising:

a base for mounting the clip on roof supporting structure;

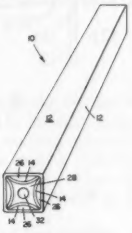
a leg extending upwardly from the base;

a lower bearing flange connected to the top of the leg and extending outwardly at an oblique angle therefrom, the flange being for use in bearing on a corresponding flange on a wall of one of the adjacent panels to hold the panel down on the roof supporting structure;

a top bearing flange connected to the lower bearing flange and extending outwardly and over the lower bearing flange and at an acute angle thereto, the flange being for use in bearing on a corresponding flange on a wall of the other adjacent panel to hold the panel down on the roof supporting structure;

a strengthening flange connected to the top of the top bearing flange and extending upwardly therefrom;
a relief slot in the strengthening flange; and
a metal tab moveably connected to the top bearing flange and extending upwardly into said relief slot and above the strengthening flange and terminating in a holding flange extending over said top bearing flange, the tab being made of a metal of higher ductility than the metal comprising the base, the leg and the bearing and strengthening flanges.

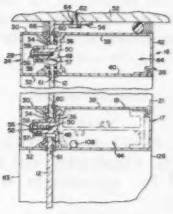
3,858,374
TRIAXIALLY PRESTRESSED POLYGONAL CONCRETE MEMBERS
Emanuel Ben-Zvi, San Jose, Calif., assignor to International Environmental Dynamics, New York, N.Y.
Filed Oct. 9, 1973, Ser. No. 404,581
Int. Cl. E04c *3/20, 3/26*
U.S. Cl. 52—223 **14 Claims**



1. A form for the construction of a triaxially prestressed concrete member comprising at least three side-defining elongate members, each side-defining member including an elongated planar portion and an elongated arcuate portion each having opposite side lateral edges in abutment with corresponding side lateral edges of the other, each side-defining elongate member being adjacent to two other of the said elongate members and joined thereto along adjacent lateral edges of the planar portions thereof so that the convex surfaces of the arcuate portions of the side-defining elongate members define an elongate chamber adapted to receive expansive concrete therein, said expansive concrete being confined by the side-defining members to prestress said expansive concrete.

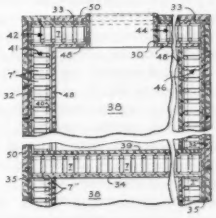
3,858,375
CURTAIN WALL WITH INTERNAL WEEP MEANS
Joe K. Silvernail, 19-22nd St. South, St. Petersburg, Fla.
Filed May 15, 1973, Ser. No. 360,603
Int. Cl. E04b *2/88*
U.S. Cl. 52—235 **11 Claims**

1. A curtain wall comprising: a fixed casing comprising a plurality of substantially horizontal members including an upper horizontal header and a lower horizontal sill held in fixed spaced relation relative to each other, a plurality of vertical members arranged in spaced relation relative to each other interconnected between said horizontal members, said vertical members including vertical jambs attached to corresponding ends of said header and said sill, said curtain wall further including internal weep means, said internal weep means comprising a condensation reservoir means formed in said lower horizontal sill, vertical channel means formed in said vertical members, weep apertures formed in said vertical members, said lower horizontal sill member including at least one drain aperture formed on the upper surface thereof in communication with said condensation reservoir means formed therein, said condensation reservoir means and said vertical channel means communication through said weep apertures and said drain aperture, said condensation reservoir means comprising a lower and upper wall held in spaced relation relative to each other by a front and rear wall, the lower portion of said vertical members extending downwardly into said condensation reservoir means, the lower end of said vertical channel means adjacent said lower wall, said vertical



members being disposed forwardly of said rear wall such that fluids flow from the upper portion of said curtain wall through said weep apertures into said vertical channel means into said condensation reservoir means including a discharge orifice to discharge moisture accumulated in said condensation reservoir means to the exterior of said curtain wall.

3,858,376
INSULATED, TUBULAR-WALL CONSTRUCTION AND METHOD
Alvin Edward Moore, Manini Way, Diamondhead, Bay St. Louis, Miss. 39520
Continuation-in-part of Ser. No. 131,003, April 5, 1971, abandoned. This application Apr. 23, 1973, Ser. No. 353,765
Int. Cl. E04b *1/74*; **E04f** *13/04*
U.S. Cl. 52—382 **16 Claims**



1. Wall structure, comprising at least four angularly joined wall elements, including:
a lower wall element of firm material having a substantially planar upper surface;
an upright can-backing wall element having a can-positioning surface of considerable area;
two other upright wall elements, angularly joined to spaced, upright portions of said can-backing element;
adhesive material on said can-positioning surface;
a plurality of used, non-rectangular cans of liquid-canning type, containing gaseous material, each of said cans comprising a tube, an imperforate can-end cover, and a second, opened can-end cover having a hole thru a minor portion of it, the said cans having: substantially parallel

axes that are transverse to said can-positioning surface; portions of the sides of each adjacent pair of cans that are in contact and other side portions of each said pair that are spaced from each other, having cavities between them; and outermost side portions of the cans that are in closely adjacent relation with surfaces of said two other upright wall elements; and

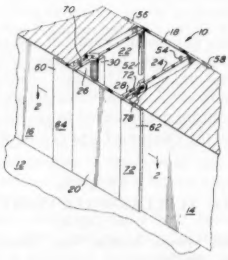
hardened stucco on said opened can-end covers, having: a substantially planar outer surface; inner portions contiguous with can material of said opened covers; other inner portions in the form of tongues projecting into said cavities between side portions of the cans; and other inner portions projecting in the form of tongues into said can-end cover holes, aiding in holding the stucco on the cans and strengthening the combination of said stucco and cans.

3,858,377

WALL PANEL JOINT STRUCTURE

Warren G. Browne, Philadelphia, and Erik Baurose, Pine Grove, both of Pa., assignors to Warren G. Browne, Philadelphia, Pa.

Filed Dec. 26, 1972, Ser. No. 318,296
Int. Cl. E04c *1/04*
U.S. Cl. 52—495 **14 Claims**



1. A wall panel structure comprising:

a. first and second discrete members coupled together, each of said members having a pair of legs, each leg on each member being coupled to a mating leg on the other member without the use of separate fasteners and thereby forming a hollow column,

b. said first member having a panel embracing flange,

c. a discrete retainer having a leg portion and a panel embracing portion, said retainer leg portion being generally parallel to an adjacent leg of said second member,

d. means for coupling said retainer leg portion to a leg of one of said first and second members at different locations so that the distance between said flange and said panel embracing portion is adjustable to accommodate panels of different thicknesses, and

e. said retainer being disposed alongside said second member so that said retainer is adjustable with respect to said flange without moving said second member.

3,858,378

GLASS-TO-METAL SEAL

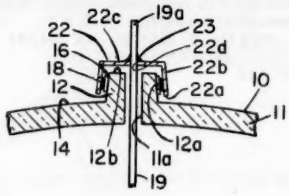
Richard E. Allen, Corning; John F. Frazier, Painted Post, and William C. Smith, Corning, all of, assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,106
Int. Cl. F16b *5/08*
U.S. Cl. 52—759 **2 Claims**

1. A hermetic glass-to-metal seal between a circular glass boss or protuberance extending outwardly from a wall of a glass article and a complementary metal member, the glass of said article having a coefficient of thermal expansion of about 36×10^{-7} in/in/°C in the temperature range of −50° to 500°C and said seal comprising:

A. an annular band of a hermetic and adherent precious metal paint surrounding the peripheral outer surface of said boss in a central area of such surface removed from the end of the boss and the base thereof where it joins said wall, said boss tapering slightly from said base towards said end thereof and said paint having a coefficient of thermal expansion of about 170×10^{-7} in/in/°C in the temperature range of 0° to 100°C;

B. a metal cap member for said boss and band, such member including a tubular skirt portion surrounding such boss and covering said band, and having a taper corresponding to that of the boss and an inner diameter slightly greater than the outer diameter of said band, and a hermetic electrical terminal portion extending from the smaller end of said skirt portion, and the metal of said member having a coefficient of thermal expansion of about 18×10^{-7} in/in/°C in the temperature range of −18 to 175°C; and



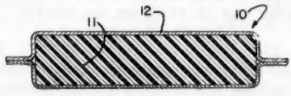
C. a hermetic solder between said band and the inner surface of said skirt portion of said cap member, such solder peripherally surrounding said band in a peripheral area thereof lying within the edges of the band and having a coefficient of thermal expansion of about 250×10^{-7} in/in/°C in the temperature range of 0° to 100°C.

3,858,379

PROCESS FOR MAKING A POLYVINYL ALCOHOL GEL SUPPORT PAD

David J. Graves, Ridley Park, Pa., and Charles R. Ritchey, Fort Sam Houston, Tex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 44,838, June 9, 1970, Pat. No. 3,689,948. This application July 21, 1972, Ser. No. 274,026
Int. Cl. A61g *7/06*; **C08f** *29/26*, *45/34*
U.S. Cl. 53—25 **3 Claims**



1. A process for making a polyvinyl alcohol gel support pad comprising:

a. dissolving high molecular weight polyvinyl alcohol in water;

b. cross-linking said polyvinyl alcohol using a cross-linking agent in the presence of an acid catalyst to form an aqueous polyvinyl alcohol gel;

c. heating a viscous solution of the gel for several hours;

d. soaking said gel in water to rid the gel of excess unreacted cross-linking agent;

e. neutralizing any unreacted cross-linking agent by reaction with urea, said urea being added by allowing the gel to soak in a solution thereof;

f. incorporating polyol molecules in said gel by soaking said aqueous gel in a polyol, said gel thereby becoming a cross-linked irreversible gel containing at least one internal plasticizer comprising said polyol and exhibiting the physical property of a slight amount of viscous creep when placed under a load and the physical property of slowly returning to its original conformation when said load is removed; and

g. inclosing said gel in a strong, flexible, elastic, tear-resistant polymeric material.

3,858,380

DEVICE FOR WRAPPING VERTICALLY PILED COINS OR THE LIKE IN BAGS MANUFACTURING OUT OF A SHRINK FILM

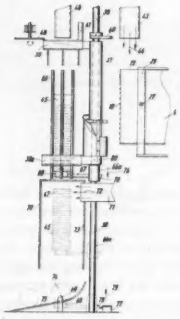
Werner Schmechel, Berlin, Germany, assignor to Firma F. Zimmerman & Co., Berlin, Germany

Filed Apr. 5, 1973, Ser. No. 348,022

Claims priority, application Germany, Apr. 18, 1972, 2219490

Int. Cl. B65b *43/04, 43/36, 57/02*

U.S. Cl. 53—52 **12 Claims**



1. An apparatus for packing piles of small flat articles such as coins in shrinkable film material, comprising support means for stacking a pile of the articles, a supply of longitudinally folded shrinkable film, means for feeding a length of said longitudinally folded shrinkable film from said supply along a feed path extending below said support means with the folded end extending downwardly, bag forming means located along said feed path length engageable with said shrinkable film along vertical lines which are longitudinally spaced and extend substantially perpendicular to said foldline, and forming bag side closures at spaced longitudinal locations, bag opening means engageable into the interior of each bag which is formed in succession to spread it open before it is moved below said support means so that when each bag arrives below said support means it is fully opened, said support means including a movable support to drop a pile of the articles into the fully opened bag, said bag being disengageable from said bag opening means upon being filled with the articles, and means for supporting said bag in its vertical position after it is filled with the articles so as to hold the articles vertically, and means for treating the film with the articles therein in order to shrink the film over the articles and cause it to tightly engage the articles, said bag opening means comprising an annular pin basket with two rings which are mutually connected by a return spring and mounted so as to be rotatable in respect to each other, swivel levers supported by said pin basket and provided on their free ends with pins which project downwardly and which are movable upon relative rotation of said rings on the action of said return spring to open outwardly within said bag to an amount to expand said bag to the selected diameter of the bag to be manufactured, and including cam means for moving said pin basket between different levels in which said pins extend downwardly into said bag and are lifted upwardly above said bag.

3,858,381

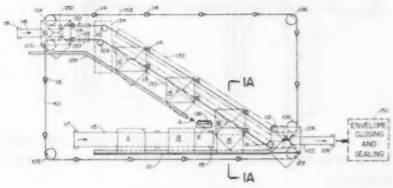
ENVELOPE STUFFING APPARATUS

Charles L. Huber, Marion, and Thomas L. Stickney, Ogdensburg, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 18, 1973, Ser. No. 380,481

Int. Cl. B65b *5/04, 43/16, 43/36*

U.S. Cl. 53—188 **8 Claims**



1. Apparatus for automatically inserting inserts into envelopes, comprising:

an envelope supply, each envelope including an opening and a closure flap therefor;

an insert supply;

first conveying means for continuously transporting envelopes supplied thereto from said envelope supply along a first conveying path, including an envelope conveyer belt means having a plurality of gripping members mounted thereon in spaced relation;

second conveying means for continuously transporting inserts supplied thereto from said insert supply along a second conveying path; said first and second conveying means defining an angle therebetween and establishing an inserting zone, and said envelopes and inserts being respectively transported in a common plane and in synchronous relation;

means for adapting said transported envelopes to receive said inserts; and

guide means adjacent said second conveying means and extending into said inserting zone for guiding said inserts to said inserting zone along said second conveying path and for urging said inserts into said envelopes as said envelopes are transported into and through said inserting zone by said first conveying means

said envelope supply comprising: means for storing a stack of envelopes; means for withdrawing successive envelopes from said stack in timed relation with the movement of said envelope conveyer belt means; and transfer means for transferring each successively withdrawn envelope to said envelope conveyer belt means at a rate that exceeds the rate at which said envelope conveyer belt means transports said envelopes to thereby drive said transferred envelope into registration with selected ones of said gripping members.

3,858,382

PLASTIC BAG DISPENSING APPARATUS

Yrjo Suominen, Amerplast, Tampere, Vehmainen, Finland

Filed June 14, 1972, Ser. No. 262,899

Int. Cl. B65b *43/36*

Claims priority, application Finland, June 14, 1971, 1656

U.S. Cl. 53—385 **4 Claims**

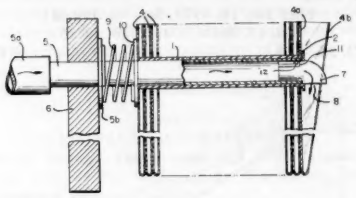
1. Apparatus for dispensing carrier bags one at a time from a stack of such bags wherein each of the bags has a pair of aligned apertures in its respective front and rear walls when

the bag is in its collapsed state, with each of said apertures being spaced from the bag mouth so that each aperture is surrounded by the material from which the bag is formed and with one of the apertures being larger than the other, said apparatus comprising:

a tube having a configuration generally conforming to that of the apertures in said bag walls and adapted to pass through the aligned apertures in a stack of such bags,

means supporting said tube at one end thereof,

a lip adjacent the other end of said tube and of such a peripheral size as to readily permit the wall of the bag



with the larger of the two apertures to pass over said lip while retaining on said tube the bag wall with the smaller aperture,

whereby a stack of bags positioned on said tube in such manner that the bag walls with the larger apertures face toward said lip can be opened one at a time by removing from said tube the bag wall with the larger aperture while the other bag wall is retained by said tube and thereafter the other bag wall can be removed from said tube by forcing said other bag wall over said lip so as to distend the smaller aperture.

3,858,383

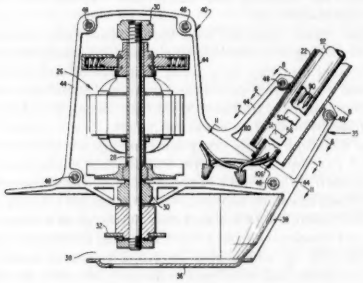
ELECTRICALLY POWERED TOOL

Richard W. Glover, Joppa, Md., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 5, 1971, Ser. No. 131,141

Int. Cl. A01g *3/06*

U.S. Cl. 56—10.5 **5 Claims**



1. In an electrically powered lawn care tool, a housing, a rotatable cutting blade, an electric motor mounted in said housing for rotating said blade, an elongated, tubular handle member having one end received in said housing and extending upwardly and rearwardly from said housing when said housing is in its upright position, said housing being mounted on said handle member at said one end thereof, handle grip means positioned on said handle member, electrically insulated electrical conductor means connected to said motor for supplying operating current thereto, and a rigid tubular part made of electrical insulating material and extending axially through said handle member, said tubular part being formed separately of said electrically insulated conductor means, and said conductor means extending through said tubular part and into said housing for connection to said motor, said housing and said handle grip means being integrally formed with first and second means respectively, and said first and second means respectively engaging the opposite ends of said tubular part to confine said tubular part against axial movement relative to said handle member.

3,858,384

CORN HEADER WITH AUTOMATIC ADJUSTMENT OF STALK ROLLS

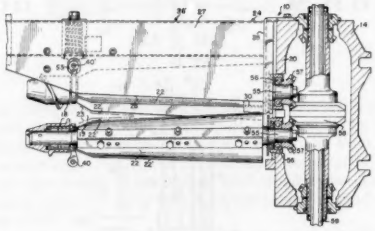
Arved Maiste, Brantford, Ontario, and Walter F. Seton, Galt, Ontario, both of Canada, assignors to White Motor Corporation of Canada Limited, Brantford, Province of Ontario, Canada

Filed Mar. 21, 1973, Ser. No. 343,431

Claims priority, application Canada, Mar. 20, 1972, 137510

Int. Cl. A01d *45/02*

U.S. Cl. 56—14.2 **7 Claims**



1. A corn harvester adapted to be mounted at the forward end of a harvesting combine comprising: an elongate gear box mounted with its longitudinal axis generally horizontal and extending transversely to the fore and aft axis of the combine; a U-shaped support frame having its bight portion mounted on said gear box with its leg portions parallel and extending forwardly and having a generally rectangular box-like structure with horizontal top and bottom plate members and vertical inner and outer side plate members with the outer side plate members being approximately flush with the adjacent opposite ends of said gear box; a pair of stalk rolls extending forwardly in between said leg portions with the rear end of each stalk roll pivotally mounted in a bearing carried on the front wall of said gear box so that the front ends of said rolls are swingable toward and away from each other in approximately the same plane; a stripper plate mounted flatwise on the top of each of said leg portions with the rear end of each stripper plate being pivotally mounted so that the front ends thereof are swingable toward and away from each other in approximately the same plane which is above and approximately parallel to said plane in which the front ends of said stalk rolls swing; a trash knife mounted on the underside of each of said leg portions with the rear end thereof being pivotally mounted so that the front ends thereof are swingable toward and away from each other in approximately the same plane which is below and approximately parallel to said plane in which the front ends of said stalk rolls swing; a gathering chain mounted above each of said leg portions and extending substantially the full length thereof; means for supporting the front end of each stalk roll from the adjacent one of said leg portions comprising a generally vertically disposed laterally shiftable support pin, a bearing bracket pivotally mounted on said support pin with a bearing supporting the front end of the adjacent one of said stalk rolls, a transversely reciprocable slide member on the inboard end of which said shiftable support pin is mounted, means supporting and guiding said slide member in its reciprocable movement in an inboard-outboard direction with respect to the adjacent one of said leg portions, and means for biasing said slide member in the inboard direc-

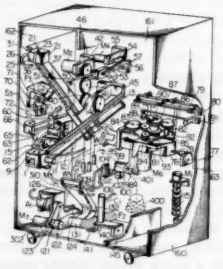
tion, and stop means limiting the inboard movement of said slide member; means connecting the front end of each of said stripper plates to the upper end of the adjacent one of said vertical support pins so as to be movable therewith; and, means connecting the front end of each of said trash knife to the lower end of the adjacent one of said vertical support pins so as to be movable therewith.

3,858,385

AUTOMATIC YARN PIECING AND KNOTTING METHOD AND APPARATUS FOR THE OPEN-END SPINNING MACHINE

Kunio Shinkai, Handa; Hazuo Yamada, Inazawa; Kenji Sakaki, Nishikasugai, and Hironori Yasuda, Inazawa, all of Japan, assignors to Howa Kagyo Kabushiki Kaisha, Aichi-ken, Japan

Filed July 1, 1971, Ser. No. 158,830
Claims priority, application Japan, July 4, 1970, 45-58144
Int. Cl. D01h *15/00*
U.S. Cl. 57—34 R **13 Claims**



1. In an open-end spinning process, an improved method of yarn piecing and knotting when said yarn breaks, said process including the steps of; supplying liberated fibers into a spinning rotor rotating at high speed so that said liberated fibers are continuously deposited upon a fiber accumulation surface of said spinning rotor; removing a bundle of fibers from said fiber accumulation surface; twisting said removed bundle of fibers by high speed rotation of said spinning rotor; continuously delivering a twisted yarn from a delivery aperture of said spinning rotor; forming a yarn package from said delivered yarn; wherein said improved yarn piecing and knotting includes the steps of:

preparing a predetermined reserve length of a supplementary yarn supplied from a source in a biased yarn path by means of a yarn reserve device said biased yarn path being V-shaped;

feeding said supplementary yarn into said delivery aperture in the reverse direction to that of the normal running of a spun yarn until an end of said yarn reaches a zone affected by the centrifugal force created by said high speed rotation of said spinning rotor whereby said end of yarn is pieced with said bundle of fibers;

taking up a twisted yarn from said delivery aperture of said spinning rotor so that an upstream yarn is formed;

retrieving the broken end of said yarn from said yarn package and unwinding a predetermined length of said yarn from said yarn package so that a downstream yarn is formed;

leading said downstream yarn and said upstream yarn along a predetermined passage in a parallel and close condition; knotting both of said yarns at a position in said predetermined passage;

cutting the excess length of said upstream yarn which includes a portion containing said yarn piecing, and an excess portion of said downstream yarn; and,

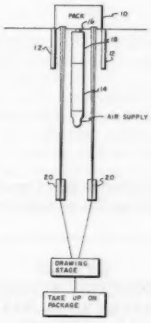
positioning said knotted yarn on a normal spinning yarn passage so that a normal spinning operation can be continuously carried out.

3,858,386

POLYESTER YARN PRODUCTION

Richard H. Stofan, Shelby, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Filed July 6, 1971, Ser. No. 160,019
Int. Cl. D02g *3/22*
U.S. Cl. 57—140 R **4 Claims**



1. A heavy denier melt spun polyester filament yarn having a tenacity of more than 7.0 grams per denier, a long and short term percent Uster of less than 1.5, a tensile factor of more than 28, and a breaking strength standard deviation of less than 0.20 grams per denier as measured in yarns across a beam.

3,858,387

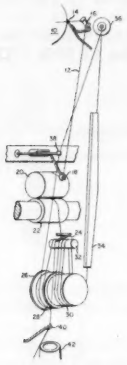
POLYAMIDE FEED YARN FOR FALSE-TWIST TEXTURING, PROCESS OF FALSE-TWIST TEXTURING, AND PRODUCT THEREOF

Janardhana B. Baliga, Newark, Del., and Robert L. Dainton, Boothwyn, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 2, 1973, Ser. No. 375,941
Int. Cl. D02g *1/02, 3/02, 3/24*
U.S. Cl. 57—140 R **5 Claims**

1. A polyamide feed yarn for drawing and texturing which has a break tenacity of at least 6.5 grams per denier and a yarn-on-yarn coefficient of friction of less than 0.50, free from stick-slip behavior, said polyamide consisting essentially of

polyhexamethylenedodecanedioamide of 30 to 70 relative viscosity having a triclinic crystallite cell structure characterized by a crystal perfection index of less than 50 percent with substantial freedom from the α-crystalline form.

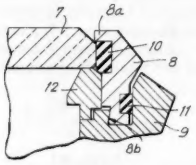


3,858,388

CRYSTAL MOUNTING STRUCTURE FOR A WATER-PROOF WATCH

Yoshiaki Fujimori, and Kanji Miyashita, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Apr. 18, 1974, Ser. No. 462,089
Claims priority, application Japan, Apr. 23, 1973, 48-47551
Int. Cl. G04b *37/08, 39/00*
U.S. Cl. 58—90 R **10 Claims**



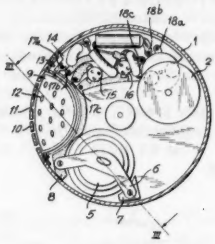
1. Crystal mounting structure for a water-proof watch comprising a case, a bezel mountable in said case, a crystal having an outer periphery disposed within said bezel, said bezel including a projection overlying said crystal and having a diameter less than the outer diameter thereof, a first sealing member interposed between said crystal and said bezel, a second sealing member interposed between said bezel and said case, and a ring disposed between said case and said crystal on the side of the crystal opposite the engagement thereof with said projection.

3,858,389

ELECTRONIC WRIST WATCH WITH ALARM

Yuki Isuruishi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 227,107, Feb. 17, 1972, Pat. No. 3,760,583. This application May 14, 1973, Ser. No. 360,171
Claims priority, application Japan, Feb. 18, 1971, 46-7159
Int. Cl. G04b *23/12;* **G04c** *21/34*
U.S. Cl. 58—57.5 **1 Claim**



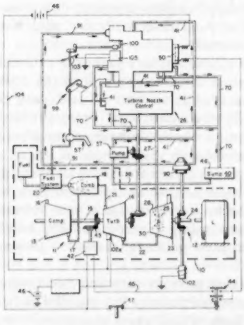
1. An alarm timepiece comprising a case provided with an internal chamber arranged peripherally and circumferentially therein, an alarm including a driving coil, a vibrating arm and a magnetic circuit in operative association in said chamber, a relatively small cover on said chamber, timing means in said case, an alarm driving circuit in said case and including a transistor for driving said alarm, a connecting means extending between and connecting said alarm driving circuit and said coil, screws supporting said cover circumferentially on said case for adjusting the volume of said alarm, said cover being provided with a single sector-shaped opening to ambient atmosphere, and a sector-shaped plate pivotally mounted on said cover to controllably damp the sound of the alarm.

3,858,390

POWER TURBINE NOZZLE CONTROL SYSTEM

Harvey B. Jansen, and Milton R., both of Adams, Tempe, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed June 4, 1973, Ser. No. 366,817
Int. Cl. F02c *7/26*
U.S. Cl. 60—39.14 **15 Claims**



1. In an engine having gas generator and power turbine

sections with throttle means, a control system for the nozzle vanes of the power turbine section, comprising:

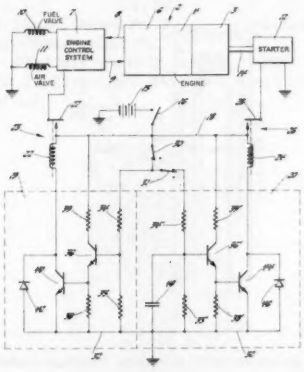
a. a fluid pressure responsive nozzle actuator member;
b. servo valve means controlling the application of fluid pressure to said actuator member;
c. servo valve positioning means having a movable member resiliently biased toward a predetermined normal position, said member being movable under fluid pressure differentials at opposite ends thereof;
d. linkage means connecting the movable member of said valve positioning means with said servo valve means and said actuator member;
e. an element engaging a portion of said linkage means and the throttle means of the engine, said element serving to impart predetermined movement to said servo valve when the throttle means is moved;
f. means operative when the speed of the gas generator section is below a predetermined value to apply fluid pressure to one end of said member to move the same to a position in which the power turbine nozzle vanes will be in a state to facilitate engine starting;
g. means operative when the gas generator section reaches a predetermined speed to interrupt the application of fluid pressure to said one end of said member and cause movement thereof to said normal position, such movement causing said nozzle vane actuator to adjust the nozzle vanes to a power turbine driving angle;
h. means responsive to power turbine speed for creating pressure differentials at opposite ends of said servo valve positioning member to impart vane angle trimming adjustment to said vane actuator to control gas turbine inlet temperature; and
i. means connected for operation by said throttle means for rendering said power turbine speed responsive means inoperative.

3,858,391

GAS TURBINE STARTING CIRCUIT

James L. Davis; Edward L. Lopke, both of Kokomo, and Louis W. Huellmantel, Warren, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1973, Ser. No. 391,786
Int. Cl. F02c *7/26*
U.S. Cl. 60—39.14 **2 Claims**



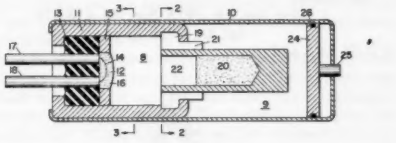
1. In a motor vehicle, the combination of a gas turbine engine, an electrically-energized starter for cranking the engine, a control system for the engine including electromagnetic devices energized during starting and operation of the engine, and a storage battery for energizing the control system and starter with first relay means connected to energize the said control means from the battery, second relay means connected to energize the starter from the battery, and common energizing means for simultaneously energizing the said relay means, in which the second relay means includes time delay means to allow energization and pull-in of the said electromagnetic devices prior to energization of the starter and the accompanying drop in battery output voltage.

3,858,392

CONTROLLED BURNING SQUIB ARRANGEMENT

John H. Evans, and Frederick R. McEwen, both of Lansdale, Pa., assignors to ICI United States Inc., Wilmington, Del.

Filed Oct. 25, 1973, Ser. No. 409,756
Int. Cl. F01b *29/08*; **F02n** *13/00*
U.S. Cl. 60—637 **9 Claims**



1. A controlled burning squib arrangement comprising:

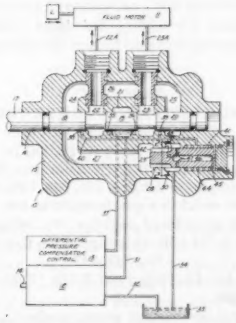
a. a first-stage squib component having an electrically activated pyrogenic explosive;
b. a second stage squib component having a pyrogenic, non-detonatable explosive in a separate cavity adjacent to and ignited by said first-stage squib;
c. a rigid chamber spacing and communicating with said first-stage and said second-stage squib components; and
d. means for venting said rigid chamber between said squibs into an expandable second chamber.

3,858,393

LOAD RESPONSIVE FLUID CONTROL VALVES

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Division of Ser. No. 185,146, Sept. 30, 1971, Pat. No. 3,744,517. This application July 6, 1973, Ser. No. 377,045
Int. Cl. F15b *11/08*, *11/16*
U.S. Cl. 60—427 **6 Claims**



1. A load responsive control system comprising in combination a variable flow pump having volume output control responsive to a pressure load signal, a fluid motor operating a load, and a valve assembly between said pump and said motor, said valve assembly comprising a housing having a fluid inlet chamber, a fluid load chamber, a fluid outlet chamber and exhaust means, first valve means for selectively interconnect-

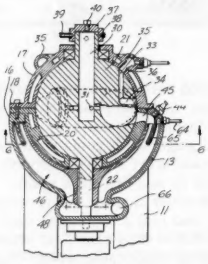
ing said load chamber with said inlet chamber and said outlet chamber to meter fluid flow to and from said load chamber, second valve means interconnecting said outlet chamber and said exhaust means operable to maintain a constant pressure difference between said load chamber and said outlet chamber when said load and outlet chambers are interconnected and said load chamber is pressurized, and a load pressure signal line for transmitting a control signal from said load chamber to said volume output control of said variable flow pump, said control being operable to maintain a constant pressure differential between said inlet chamber and said load chamber.

3,858,394

COMBINED ROTARY INTERNAL COMBUSTION ENGINE AND STEAM TURBINE

Ernest W. Anderson, 5256 Mississippi Bar Dr., Orangevale, Calif. 95662

Filed Nov. 26, 1973, Ser. No. 418,876
Int. Cl. F01k *23/14*
U.S. Cl. 60—617 **5 Claims**



1. A combined rotary internal combustion engine and steam turbine comprising a substantially spherical housing having a pair of oppositely disposed combustion chambers formed therein, a substantially spherical rotor mounted for rotation in said housing, a plurality of veins mounted in said rotor for engagement with said housing and said combustion chambers, means for feeding fuel to said combustion chambers, means for exploding the fuel in said combustion chambers, a semi-spherical turbine rigidly secured to said rotor and rotating therewith, means for feeding exhaust gases from said combustion chambers to said turbine for driving said turbine, means actuated by heat from said combustion chamber for producing steam, and means for feeding the steam produced by said combustion chamber into said turbine for driving said turbine.

3,858,395

EXTERNAL COMBUSTION POWER PRODUCING METHOD AND APPARATUS

John Gordon Davoud, and Jerry A. Burke, Jr., both of Richmond, Va., assignors to D-Cycle Associates, Richmond, Va.

Continuation-in-part of Ser. No. 226,206, Feb. 14, 1972, Pat. No. 3,798,908, which is a continuation of Ser. Nos. 58,099, July 24, 1970, abandoned, and Ser. No. 142,468, May 12, 1971, Pat. No. 3,716,990. This application Dec. 26, 1972, Ser. No. 318,433
Int. Cl. F02g *1/06*; F25b *27/00*
U.S. Cl. 60—688 **7 Claims**

1. An external combustion power producing method comprising:

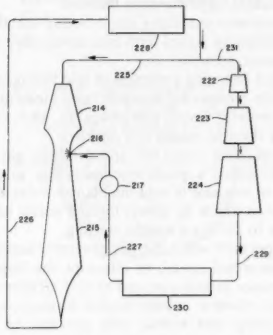
a. heating a mass of condensable fluid to a gaseous working temperature and pressure;

b. directing a portion of the gaseous condensable fluid into a positive displacement engine or through a turbine-pressure recovery diffuser set so arranged as to effect recovery of pressure to the operating inlet pressure of the heat input unit;

c. expanding a portion of the mass of the gaseous heated condensable fluid in an expansion device;

d. condensing the expanded portion of the gaseous condensable fluid;

e. adding the condensate or its weight equivalent from step (*d*) to the heated gaseous condensable fluid in the positive displacement engine, to thereby reduce the volume



of the gaseous fluid contained therein; or into the diffuser of the turbine pressure-recovery diffuser set, the angle of divergence of the diffuser being such as to bring the pressure of the exit stream from the diffuser to the operating inlet pressure of the heat input unit;

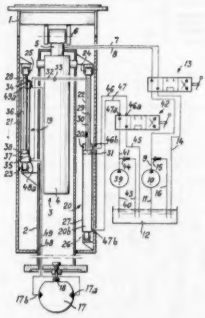
f. thereafter directing the mass of gaseous fluid of reduced volume into the heater for reheating to the working temperature.

3,858,396

DEVICE FOR FEEDING A HYDRAULIC LOAD ELEMENT MOUNTED ON A TELESCOPIC STRUCTURE, BY MEANS OF TWO JACKS

Bernard Bourges, Le Plessis-Belle-Ville, France, assignor to Societe Anonyme: Poclain, Oise, France

Filed July 9, 1973, Ser. No. 377,283
Claims priority, application France, Aug. 2, 1972, 72.27878
Int. Cl. F01b *21/04*
U.S. Cl. 60—698 **8 Claims**



1. In a power-actuated telescopic structure including outer and inner axially adjustable telescopic elements mounted to slide relative to one another, drive means operatively coupled to said telescopic elements to effect axial adjustment of said telescopic elements relative to each other, a hydraulic load motor having first and second power input-exhaust connections drivingly connected to an external end of one of said telescopic elements, pump means having a power fluid output for connection to said drive means and inflow conduit means

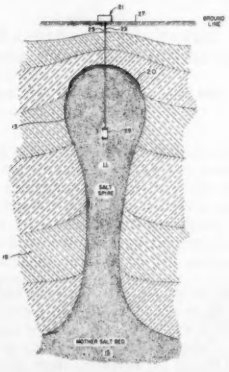
connecting said pump means to a supply reservoir of activating fluid, the improvement comprising: a first fluid pressure actuated jack including a first cylinder having a head end and a rod end, a first piston in said cylinder and a first piston rod extending from said first piston axially outwardly from the rod end of said first cylinder, means connecting said first cylinder to said inner telescopic element, means connecting an outer external end portion of said first rod to said outer telescopic element for integral translational movement with said telescopic elements, a second fluid pressure actuated jack including a second cylinder having a head end and a rod end, a second piston and a second piston rod extending from said second piston outwardly externally of said head end of said second cylinder, means connecting said second cylinder to said outer telescopic element, means connecting said second piston rod to said inner telescopic element for translational movement with said telescopic elements, said first and second jacks being of substantially equal size and having their cylinders and pistons disposed in a substantially parallel longitudinally offset manner with respect to one another, said first piston in said first cylinder of said first jack defining a separation between a first small chamber in said first cylinder on the side of said first piston from which said first piston rod extends and a first large chamber in said first cylinder on the opposite side of said first piston, said second piston in said second cylinder separating the second cylinder into a second small chamber on the side of said second piston from which said second piston rod extends and a second large chamber on the opposite side of said piston, a selectively operable distributor valve, a source of pressurized fluid connected to said distributor valve, conduit means for providing fluid communication between said distributor valve means and the large chamber and small chamber of one cylinder, connector conduit means providing fluid communication between said small chambers and said large chambers respectively, said distributor valve including selectively operable valve means for enabling the supply of pressurized fluid to a desired one of said chambers of said one cylinder while concurrently venting the other chamber of said one cylinder, and conduit means for providing fluid communication between the small chamber and large chamber of one of said cylinders respectively with the first and second power input-exhaust connections of said load motor.

3,858,397

CARRYING OUT HEAT-PROMOTABLE CHEMICAL REACTIONS IN SODIUM CHLORIDE FORMATION CAVERN

Charles H. Jacoby, Dalton, Pa., assignor to International Salt Company, Clarks Summit, Pa.

Filed Mar. 19, 1970, Ser. No. 21,082
Int. Cl. E21b *43/00*; B65g *5/00*; B01j *1/00*
U.S. Cl. 61—.5 **7 Claims**



1. A method of performing a chemical reaction which comprises:

determining the location of an underground sodium chloride salt formation having heat conductivity characteristics much higher than the surrounding geologic structures, said formation extending downwardly into thermal connection with a deep seated heat source, said heat source being at a depth which is inaccessible by commercially practicable bore hole drilling techniques, said formation extending upwardly to a level which is accessible by commercially practicable bore hole drilling techniques,

dissolving a cavity to form a reaction cavern of selected size within said formation at a depth of at least 10,000 feet below sea level sufficient to insure a selected temperature of at least 100°C in said cavern and terminating the dissolution of said cavity at a selected size which provides a heat transfer area such that heat energy will flow from said source to said cavern at a selected rate so as substantially continuously to replenish heat abstracted therefrom at said selected rate and maintain said selected temperature within said cavern,

feeding material which is inert with respect to the salt and is a reactant of a heat-promotable chemical reaction which will occur at said selected temperature through a passageway to said cavern at such rate as to elevate the temperature thereof to the reaction temperature and thereby initiate and maintain the chemical reaction while holding the reactant in said cavern for a sufficient period of time to produce a reaction product,

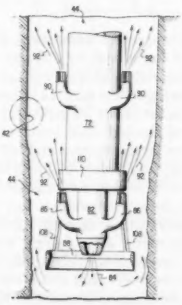
and removing the reaction product from the cavern at a rate insufficient to abstract heat energy therefrom at said selected rate.

3,858,398

METHOD OF AND APPARATUS FOR MAKING SAND DRAINS

Abraham Francois Van Weele, Waddinxveen, Netherlands, assignor to Vibroflotation Foundation Company, Pittsburgh, Pa.

Continuation of Ser. No. 851,353, Aug. 19, 1969, abandoned. This application June 27, 1973, Ser. No. 373,920
Int. Cl. E02b *11/00*; E02d *5/34*
U.S. Cl. 61—11 **4 Claims**



1. The method of installing a sand drain in a stratum of impervious material so that the portion of said stratum adjacent to the drain remains relatively undisturbed and the wall of said sand drain relatively free to permit water to flow into sand within said drain with a bailer provided with at least one downwardly directed nozzle, a plurality of upwardly directed nozzles, and an annular knife edge positioned axially ahead of said downwardly directed nozzle, which method comprises the steps of:

directing a first water jet from said downwardly directed nozzle into said stratum to form a hole therethrough, said hole being formed in the absence of a casing or mandrel for supporting the wall of the hole so formed, and in the absence of an axially extending vane or flute on said bailer,

directing a plurality of additional water jets upwardly in said hole from said upwardly directed nozzles for removing particles of said stratum from said hole and for erroding the surface of said hole to form said wall of the said drain,

reciprocating the bailer in said hole to produce a pulsating action of said water jets in said hole and to provide a cutting action with said annular knife until said hole reaches the desired depth,

slowly raising said bailer to the top of said hole,

lowering said bailer to the bottom of said hole,

maintaining said bailer in the bottom of said hole until the water issuing from the top of said hole is relatively clear of particles,

again slowly raising said bailer to the top of the hole and removing the bailer therefrom, and

filling said hole with sand by slowly depositing said sand into the top of said hole and allowing the sand to sink slowly to the bottom of the hole.

3,858,399

SHEETING ARRANGEMENT

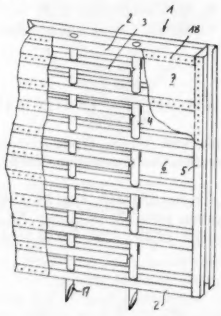
Josef Krings, Hans-Bockler-Str. 23, D 5138 Oberbruch, Germany

Filed May 11, 1973, Ser. No. 359,516

Claims priority, application Germany, June 22, 1972, 2230395

Int. Cl. E21d *5/10*

U.S. Cl. 61—41 A **6 Claims**



1. A sheeting arrangement comprising a frame including a plurality of spaced horizontal rigid frame members, vertical frame members secured to at least certain of said horizontal frame members, facing sheets secured to opposite faces of said frame, said frame additionally including tubular vertical frame members extending through said horizontal frame members and secured thereto, at least upper ends of said tubular frame members being open and accessible, said tubular frame members including locking means for releasably securing pulling means to said sheeting arrangement, said locking means including stop members within said tubular frame members for interlocking engagement with pulling means, said pulling means including a rod member receivable in the upper end of said tubular frame members, and abutment means on said rod members passable between said stop members and engageable therebeneath upon rotation of said rod members relative to said tubular frame members.

3,858,400

METHOD OF TUNNEL BORING AND TUNNEI REINFORCEMENT MATS

Jean Bernold, Hasenberg, Walenstadt, Switzerland

Filed Sept. 26, 1972, Ser. No. 293,850

Claims priority, application Switzerland, Sept. 29, 1971, 14124/71

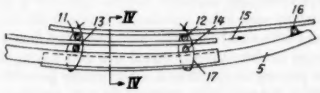
Int. Cl. E21d *11/10*

U.S. Cl. 61—45 R **10 Claims**

1. In the art of tunnel boring utilizing a tunnel boring machine, the method of securing the tunnel walls comprising

providing reinforced tunnel wall mats having grid-like interconnected rods and reinforcing angle irons the rods extending in one direction and the angle irons transverse thereto and being secured to the angle irons at the apices thereof, and wherein the terminal ends of the angle irons (5) are left free from crossing rods and the other rods extend to the vicinity of the terminal ends of the angle irons;

shaping the reinforced mats in the approximate shape of the tunnel walls over at least a portion of the walls bored by the boring machine and immediately following said boring machine;



locating a shaped, reinforced mat against the tunnel walls with the apex of the angle extending transversely of the axis of the tunnel and facing inwardly of the tunnel, the open angle of the angle irons facing the tunnel walls to space the grid-like rods from the tunnel wall;

sliding the next mat in parallel to the mat located against the tunnel walls;

interfitting the next adjacent angle members of the thus adjacently located mats by interengaging a terminal angle iron free from rods of one mat with an angle iron of the adjacently located mat;

and spraying concrete against the mats, between the mats and the tunnel wall, the open angles of the angle members forming a back splash shield.

3,858,401

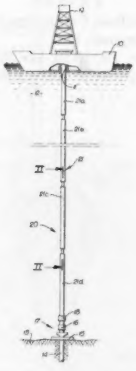
FLOTATION MEANS FOR SUBSEA WELL RISER

Bruce J. Watkins, Palos Verdes Pen., Calif., assignor to Regan Offshore International, Inc., San Pedro, Calif.

Filed Nov. 30, 1973, Ser. No. 420,678

Int. Cl. E21b *7/12*

U.S. Cl. 61—46 **13 Claims**



1 Flotation means for a subsea well riser conduit run between a floating vessel provided with a source of compressed gas and a subsea wellhead, said flotation means comprising:

a plurality of open bottomed buoyancy gas receiving chambers and means for mounting them about and along said riser conduit; and

gas supply means including gas conduit means connected between said source of compressed gas and each of said chambers for introducing gas in selectable amounts into each of said chambers independently of the others, displacing water entrained therein out open bottoms of said chambers, to provide selectable amounts of buoyancy to said riser conduit.

3,858,402

OIL STORAGE TERMINALS

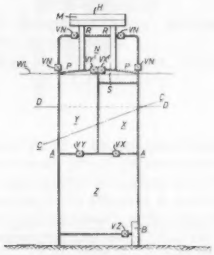
Rowland Baker, Somerset, and Gordon Norton, Epping, both of England, assignors to The Balaeva Group Limited (formerly Seaward Structures International), Cambridge, England

Filed Jan. 17, 1973, Ser. No. 324,303

Claims priority, application Great Britain, Jan. 18, 1972, 2294/72

Int. Cl. B65g *5/00*; **B63b** *35/00*

U.S. Cl. 61—46.5 **6 Claims**



1. A method of oil storage in a storage terminal in the form of an elongated vessel subdivided by internal bulkheads into a plurality of separate compartments provided with flooding and venting valves comprising the steps of floating said vessel in an empty condition in a generally horizontal attitude and towing it to its site of intended use; free flooding said vessel with seawater by sequential operation of the said valves to flood said compartments successively, beginning at one of its ends to bring said vessel to a generally vertical attitude; further flooding said vessel causing it to sink and settle on the sea-bed with one said one end resting on said sea-bed; and at least partially filling said vessel with oil, with concomitant displacement of seawater from the interior of said vessel, said vessel remaining grounded by virtue of its own weight and ballast.

3,858,403

METHOD AND APPARATUS FOR DRYING GASES

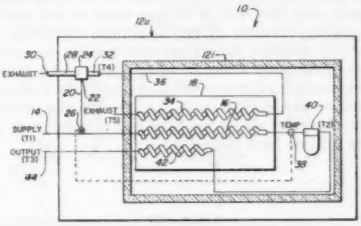
Myron Dunn, Littleton, Colo., assignor to Wilkerson Corporation, Eaglewood, Colo.

Filed Jan. 30, 1974, Ser. No. 437,861

Int. Cl. F25b *9/02*

U.S. Cl. 62—5 **8 Claims**

1. The gas drying apparatus which comprises: a triple pass heat exchanger having the inlet to its first pass connectable to a source of wet gas under pressure, a vortex tube operative to split an incoming stream of gas into a relatively warmer fraction and a relatively cooler fraction connected to deliver the latter to the second pass of the heat exchanger for movement therein in heat exchange relation to the wet gas moving through said first pass, a separator effective to remove the condensate condensed from the wet gas in the heat exchanger connected to receive the partially dried gas issuing from the first pass of the latter, first conduit means connected to receive the partially dried gas from the separator following removal of the condensate therefrom and recycle same into the third pass of the heat exchanger for flow therethrough alongside the gases flowing in said first and second passes so as to maximize heat transfer from the wet gas in said first pass without warming the cold gas in said second pass, second conduit means connected to receive a portion of the gas entering the first pass and deliver same to the vortex tube, and



thermostatically controlled valve means connected in the second conduit means operative upon actuation to shut off the gas supply to the vortex tube whenever the temperature of the gas leaving the first pass of the heat exchanger falls below a preset minimum.

3,858,404

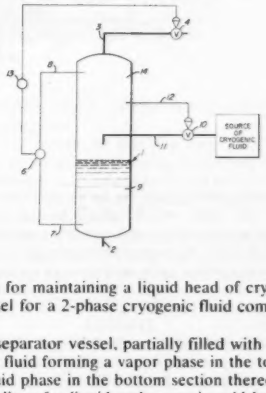
PHASE SEPARATOR FOR CRYOGENIC FLUID

Robert Bruce Davis, Nyack, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 25, 1973, Ser. No. 373,382

Int. Cl. F17b *7/02*

U.S. Cl. 62—51 **2 Claims**



1. A system for maintaining a liquid head of cryogen in a separator vessel for a 2-phase cryogenic fluid comprising in combination:

1. a sealed separator vessel, partially filled with a 2-phase cryogenic fluid forming a vapor phase in the top section and a liquid phase in the bottom section thereof, having discharge lines for liquid and vapor in said bottom and top sections, respectively, and a conduit connecting said vessel to a source of cryogenic fluid;
2. a pressure regulating valve disposed in said conduit for controlling the flow of cryogenic fluid from said source to said separator vessel, said regulating valve being responsive to the vapor phase pressure in said vessel so as to close said valve when said vapor phase pressure exceeds the desired operating pressure in said vessel;
3. a pneumatic diaphragm-operated vapor venting valve of the air to close type disposed in said vapor discharge line for controlling the flow of vapor from the separator vessel;
4. a pneumatic computing relay for actuating said diaphragm-operated valve, said relay being connected to the separator vessel to sense the differential pressure caused by the varying liquid head, the relay having one pressure

signal line in the top vapor phase section of the vessel and a second pressure signal line in the bottom liquid phase section; and

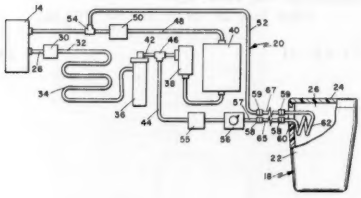
5. an amplifier for multiplying the output signal of said computing relay by a factor of from about 3:1 to 6:1, said relay having its bias adjusted such that at the maximum allowable liquid head in the vessel the resulting amplified signal from the relay is at least equal to the maximum operating pressure in the diaphragm operating range thereby enabling the vapor venting valve to open and close in response to the changing liquid level in the vessel and produce a corresponding change in the vapor phase pressure of said vessel such that the flow rate of cryogen into the vessel will be regulated so as to continually maintain a liquid head therein.

3,858,405

REMOVABLY POSITIONED REFRIGERATED CHEST FOR MOTOR VEHICLES

Walter R. Manzke, 13601 Jackrabbit Rd., Poway, Calif. 92064

Filed Oct. 26, 1973, Ser. No. 410,087
Int. Cl. F25d *23/12*
U.S. Cl. 62—196 **5 Claims**



1. In a refrigerating unit for being positioned in a vehicle such as in the trunk, which vehicle has an air conditioning system with a compressor and primary conduits for carrying coolant fluid from the compressor through a condenser and through an expansion valve and through an evaporator back to the compressor, the improvement comprising,

a cooling element for being positioned in the trunk of the vehicle,

secondary and separate conduit means interconnected with the primary conduit for carrying coolant from the primary conduits at a location between the cooling coils and the expansion valve through said cooling element and back to the primary conduit between the evaporator and the compressor,

expansion orifice means in said secondary conduit means for expanding the coolant fluid passing therethrough,

chest means for fitting in the trunk and enclosing said cooling element,

valve means for controlling the amount of coolant fluid flow through said secondary conduit means,

said chest means comprises a chest made of insulating material,

said chest having a closable opening for passing said cooling element into said chest,

said chest having a vent for admitting air from outside said chest into the internal volume of said chest,

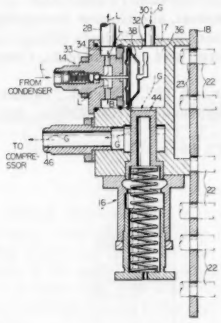
and temperature valve means for selectively opening and closing said vent.

3,858,406

REFRIGERANT EVAPORATOR FOR AIR CONDITIONER

Masao Izumi, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Sept. 4, 1973, Ser. No. 394,089
Claims priority, application Japan, Sept. 6, 1972, 47-89324; Sept. 6, 1972, 47-104023
Int. Cl. F25b *41/04*
U.S. Cl. 62—210 **6 Claims**



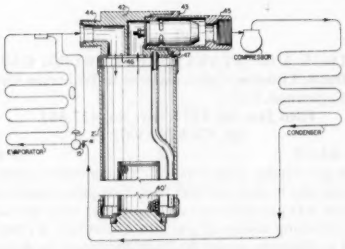
1. A refrigerant evaporator for an air conditioner comprising: a fin and tube assembly having an end wall and a coil with inlet and outlet ends projecting through said end wall; said coil being formed from a plurality of U-shaped tubes interconnected by said end wall in a series arrangement, an expansion valve; a back pressure valve; and means connecting said expansion valve, said back pressure valve and said coil of said fin and tube assembly in a refrigerant flow relationship, said means being integral with said end wall, said expansion valve and said back pressure valve.

3,858,407

COMBINATION LIQUID TRAPPING SUCTION ACCUMULATOR AND EVAPORATOR PRESSURE REGULATOR DEVICE

Ernest W. Schumacher, Portsmouth, Va., assignor to Virginia Chemicals Inc., Portsmouth, Va.

Filed Aug. 14, 1973, Ser. No. 388,281
Int. Cl. F25b *41/04*
U.S. Cl. 62—217 **1 Claim**



1. A liquid trapping suction accumulator adapted for insertion in a vapor-compression refrigeration system between the evaporator and compressor, comprising:

A. an accumulator chamber defined by a casing having a top and a bottom;

B. inlet and outlet ports in the top, and opening into said chamber and respectively adapted for operative connection into said evaporator and said compressor;

C. removable adaptor means forming an evaporator pressure regulator chamber positioned in said outlet port in communication with said accumulator chamber; said adaptor means being further characterized as

i being threadably removably positioned adjacent the top of said accumulator chamber,

ii containing an evaporator pressure regulator device in compressive sealing relationship to the adaptor means so as to gauge admission of vapor through said evaporator pressure regulator chamber and said outlet;

D. a desiccant removably supported in the bottom of said accumulator chamber; and

E. an eductor tube extending independently from the bottom of said accumulator chamber being offset in its lower portion to accommodate said desiccant while being in fluid communication with said evaporator pressure regulator chamber.

3,858,408

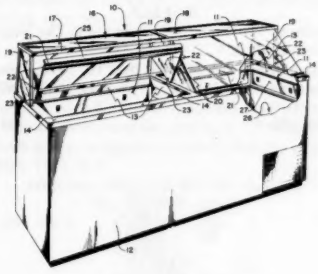
REFRIGERATED CABINET HAVING DETACHABLE FROST SHIELD

Andre J. Kenyon, Rosemount, Minn., assignor to Schaefer Corporation, Minneapolis, Minn.

Filed Sept. 26, 1973, Ser. No. 400,847

Int. Cl. F25b *5/00*

U.S. Cl. 62—283 **6 Claims**



1. A refrigerated cabinet having a refrigerated wall with a liner surface thereon on which frost would tend to collect, and a detachable frost shield having a substantially planar panel covering a frost susceptible portion of said liner surface, said frost shield having a mounting means detachably wedging said shield tightly in contact with said liner surface.

3,858,409

REFRIGERATOR CONSTRUCTION

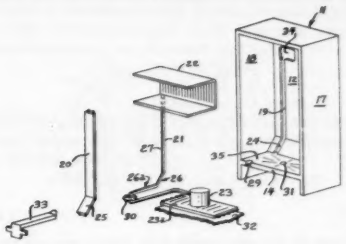
Wayne L. Besing, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 28, 1973, Ser. No. 401,829

Int. Cl. F25d *21/14*

U.S. Cl. 62—285 **9 Claims**

1. A refrigerator comprising: a cabinet having an interior defined by walls including a side wall and a bottom wall, said cabinet having foamed insulation; a refrigeration system comprising an evaporator, a condenser, a compressor and refrigerant lines interconnecting said evaporator, condenser and compressor; groove means forming a generally vertical groove integral with said side wall, said groove having an open side at said interior with said refrigerant lines located in said groove; a cover strip closing said open side of the groove at said interior and enclosing said refrigerant lines; means locating said compressor beneath said bottom wall; means forming an opening in said bottom wall through which said refrigerant



lines extend; and means both closing said opening and sealing said refrigerant lines to said bottom wall at said opening.

3,858,410

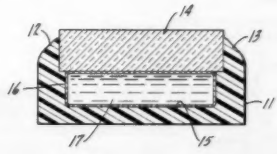
DENTAL MATERIAL MIXING HOLDER AND COOLER

Daniel H. Drake, 1969 Carolina Ave., N.E., St. Petersburg, Fla. 33703

Filed Sept. 24, 1973, Ser. No. 400,414

Int. Cl. F25d *13/00*

U.S. Cl. 62—458 **9 Claims**



1. A combination dental material mixing slab holder and cooler which comprises:

a base plate of a material that is a poor heat conductor having a pair of spaced upwardly projecting ribs for receiving a mixing slab and a central well between said ribs; a mixing slab having good thermal conductivity fitting within said base plate ribs;

a sealed container of a material that is a good heat conductor in said central well and adjacent said mixing slab; and a reusable heat sink means within said sealed container.

3,858,411

SHAFT COUPLING FOR TRANSMISSION OF AXIAL THRUST AND TORQUE

Heinz M. Hiersig, Dusseldorf-Oberkassel; Klaus Hansgen, Witten, and Wolfgang Sudhoff, Dortmund-Mengede, all of Germany, assignors to Mannesmann-Meer Aktiengesellschaft, Ohlerkirchweg, Monchengladbach, Germany

Filed May 31, 1973, Ser. No. 365,543

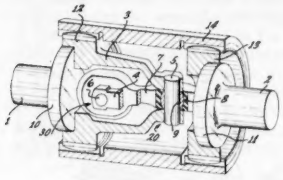
Claims priority, application Germany, June 20, 1972, 2230928

Int. Cl. F16d *3/00*

U.S. Cl. 64—1 R **4 Claims**

1. Shaft coupling for interconnecting two shafts and having a first fork on one shaft and a second fork on the other shaft, angularly offset by 90° to the first fork and overlapping the first fork for coupling position of the two forks, there being additional follower connection means between the two shafts in lateral offset disposition from the fork and located beyond the expected range of axial angular displacement of the shafts as it effects the disposition of the forks, the improvement comprising:

a first joint on the first fork; a second joint on the second fork, the first joint disposed between the second joint and the end of the one shaft from which projects the second fork, the second joint disposed between the first joint and



the end of the other shaft from which projects the first fork; and

a tension member hingedly interconnecting the first and the second joint.

3,858,412

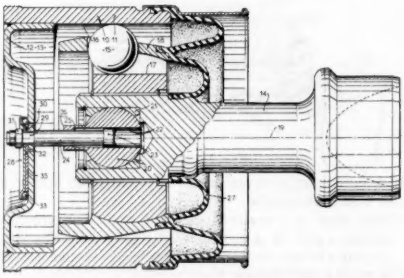
UNIVERSAL JOINT WITH BREATHER VALVE

Leslie George Fisher, and Michael David Jones, both of Birmingham, England, assignors to GKN Transmission Limited, Erdington, Birmingham, England

Filed July 9, 1973, Ser. No. 377,254

Claims priority, application Great Britain, July 7, 1972, 31907/72

U.S. Cl. 64—8 **11 Claims**



1. In a universal joint comprising an outer member affording a chamber in which is received a part of an inner member and means for transmitting torque between the members so that relative rotation about a longitudinal axis of the joint is prevented, the members being relatively movable angularly about axes perpendicular to the longitudinal axis and relatively displaceable along the longitudinal axis, the improvement comprising means defining a passageway into said chamber and movable closure means for normally closing the passageway and for opening the passageway under the action of centrifugal force when the joint rotates to flow both into and out of the chamber.

3,858,413

UNIVERSAL JOINT

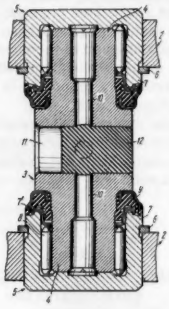
Jury Mitrofanovich Nemtsov, Trekhprudny pereulok, 5/15, kv. 21; Alexandr Galikovich Klimov, Ryazansky prospekt, 91, korpus 1, kv. 168, and Ivan Ignatievich Grishin, Volzhsky bulvar, 12, korpus 2, kv. 11, all of Moscow, U.S.S.R.

Filed May 2, 1973, Ser. No. 356,595

Int. Cl. F16d *3/26*

U.S. Cl. 64—17 A **2 Claims**

1. A universal joint comprising: two forks with coaxial holes provided in their jaws; a cross with trunnions fitted into the holes in said forks, said cross having a hole formed centrally therein and square to the axes of said trunnions; bearings mounted one on each of said trunnions and secured in said fork holes; through axial passages provided in said trunnions and communicating with said cross central hole; a relief valve



fitted in said cross central hole and adapted to close the outlets from said axial passages in the trunnions, which relief valve is essentially a stem made of a resilient oil-resistant material and fixed axially by making it an interference fit in said cross central hole.

3,858,414

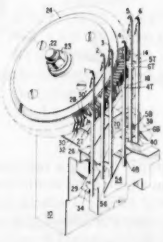
CIRCULAR KNITTING MACHINE WITH PATTERN WHEELS

Lester Mischon, New York, N.Y., assignor to The Singer Company, New York, N.Y.

Continuation of Ser. No. 99,465, Dec. 18, 1970, abandoned. This application July 19, 1973, Ser. No. 380,633

Int. Cl. D04b *15/76*

U.S. Cl. 66—50 A **11 Claims**



1. A circular knitting machine of the type having a cylinder provided with peripheral slots for accommodating latch type knitting instrumentalities, and at least three relatively rotatable serially adjacent cam sections cooperative with said cylinder, said adjacent cam sections being provided with respective pattern wheels, each of said pattern wheels being of the type having its plane or rotation at an angle with respect to the direction of relative cylinder travel and being provided with skewed jack accommodating slots for use in raising certain of said instrumentalities of said cylinder to various predetermined heights, said machines being characterized in that:

a. the total space requirements of said three serially adjacent cam sections peripherally of the cylinder is not substantially greater than that occupied by the needle butt contacting surfaces of the raise cams, the pattern wheels and the stitch cams which act to change the elevation of the needles of said three adjacent cam sections,

b. at least each of some of said knitting instrumentalities are provided with first and second butts,

c. said adjacent cam sections with pattern wheels are further provided with a low raise cam adapted to raise the first butts of knitting instrumentalities to a pattern wheel introduction elevation in which the second butts thereof are positioned for accommodation into mesh with the pattern wheel slots, a stitch cam to lower knitting instrumentalities to a stitch making position, a placer cam between the raise and stitch cam underlying an effective portion of the pattern wheel of the cam section, a wing cam to lower knitting instrumentalities other than the knitting instrumentalities raised by the pattern wheel from said pattern wheel introduction elevation to a welt position, and a guard cam disposed to restrict the upward movement of knitting instrumentalities from the raise cam and placer cam, the pattern wheels of said adjacent cam sections being closely nested with a non-working portion of the pattern wheel of one cam section overlying the plane of a working portion of the stitch cam of the adjacent cam section encountered by the knitting instrumentalities before entering said one cam section,

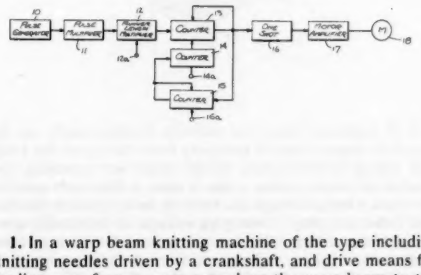
d. each of the raise, placer and stitch cams being disposed for cooperation only with said first butt of each of those knitting instrumentalities with first and second butts, and each of said pattern wheels being disposed for cooperation only with said second butt of each of said knitting instrumentalities with first and second butts, said raise cam being effective to raise said knitting instrumentalities less than one third of the maximum total stroke capable of being imparted to said needles by the combined effect of the raise cam and the pattern wheel, the raise and stitch cams in each cam section being spaced apart a distance not substantially greater than that required to have interposed between working portions thereof the working edge portion of the overlying pattern wheel.

3,858,415

AUTOMATIC YARN FEED RATE CONTROL SYSTEM FOR WARP BEAM KNITTING MACHINES

M. Van Wilson, Barboursville, and Gary L. Miller, Gordonsville, both of Va., assignors to Liberty Fabrics of New York, Inc., New York, N.Y.

Filed Dec. 10, 1973, Ser. No. 423,124
Int. Cl. D04b *23/00*
U.S. Cl. 66—86 A **10 Claims**



1. In a warp beam knitting machine of the type including knitting needles driven by a crankshaft, and drive means for feeding yarn from a warp wound on the warp beam to the knitting needles, an automatic yarn feed rate control system comprising:

first means for generating a first electrical signal which is proportional to both the knitting speed of the knitting machine and the length of yarn consumed by the knitting machine during a predetermined knitting cycle; and

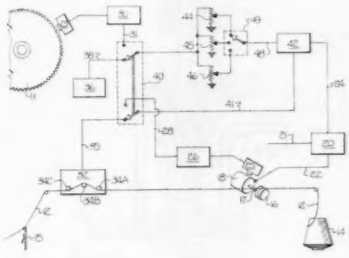
second means, coupled to said first means and to said drive means, for generating a second electrical signal which is inversely proportional to the instantaneous diameter of the warp, said second electrical signal driving the warp beam at a rotational speed dependent upon the diameter of the warp so that yarn is fed from said warp to said knitting needles at a constant feed rate.

3,858,416

KNITTING MACHINE YARN FEEDING APPARATUS

Eugene F. White, and Frances H. White, both of 600 S. Church St., Monroe, N.C. 28110

Filed July 23, 1973, Ser. No. 381,629
Int. Cl. D04b *15/48*
U.S. Cl. 66—132 R **7 Claims**



1. In combination with a knitting machine having a rotating drive member, a plurality of needles moved by the drive member for knitting fabric and at least one yarn package from which yarn to be knit is supplied to the needles, yarn feeding apparatus comprising:

means interposed between a yarn package and the needles for positively engaging a corresponding yarn to be supplied for knitting,

variable speed drive means drivingly connected with said yarn engaging means for driving the same in rotation and thereby for withdrawing yarn from the corresponding package and feeding the yarn to the needles as required for knitting,

first control means operatively connected with said drive means for controlling the rotational speed thereof,

tachometer means operatively responsive to said drive means for sensing rotation thereof and for generating a first signal indicative of the speed of rotation thereof,

rotation means operatively responsive to the drive member for sensing rotation thereof and for generating a second signal indicative of the speed of rotation thereof,

yarn tension means operatively responsive to tension in the yarn between the needles and said yarn engaging means for sensing tension therein and for generating a third signal indicative of the level of tension therein,

standard means for generating a fourth signal indicative of a desired level of tension, and

means operatively connected with said first control means and operatively connected with said tachometer means, said rotation means, said tension means and said standard means and including switch means for selecting between correlation of said first and second signals and correlation of said third and fourth signals and second control means for varying the rotation of said drive means in accordance with any difference from a predetermined correlation between a selected pair of signals,

whereby yarn is withdrawn from the corresponding yarn package as demanded for knitting by the needles.

3,858,417
METHOD OF ADVANCING KNITWORK DURING ITS MANUFACTURE

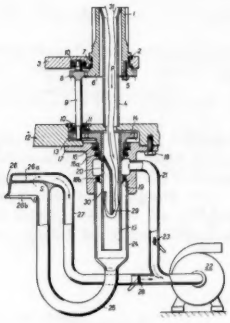
Pavel Uhlir, and Jaroslav Maxa, both of Trebic, Czechoslovakia, assignors to ELITEX, Zavody textilniho strojirenstvi, generalni reditelstui, Liberec, Czechoslovakia

Filed Dec. 18, 1972, Ser. No. 316,005

Claims priority, application Czechoslovakia, Dec. 17, 1971, 8784-71

Int. Cl. D04b *15/92*

U.S. Cl. 66—149 S **9 Claims**



1. A method of pneumatically transporting knitwork upon its manufacture in a circular knitting machine having a rotating needle cylinder on which said knitwork is formed and an open-ended rotating tube axially aligned with said needle cylinder, said tube having an elongated baffle secured to a portion of its inner wall between said cylinder and the open end, said baffle opening toward the open end of said tube to form on one side a pocket and on the other side a passage for the knitwork, comprising the steps of withdrawing said knitwork through the passage in said tube beneath the opening of said pocket, applying suction to said pocket to draw the leading end of said knitwork therein, rotating said tube about its axis at a speed substantially equal to the rotating cylinder and applying suction to the end of said tube to further withdraw the knitwork through said passage while retaining the leading end with said pocket until the trailing end of said knitwork is completed, thereafter knocking off said knitwork from said needle cylinder and releasing said leading end from said pocket and withdrawing the leading or trailing end of the knitwork through the open end of said tube.

3,858,418
SANITARY DIAPER HANDLING APPARATUS

Larry L. Butler, 2710 Sumner St., Hoquiam, Wash. 98550

Filed Dec. 19, 1972, Ser. No. 316,465

Int. Cl. D06f *5/00*

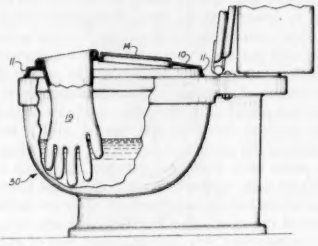
U.S. Cl. 68—235 D **5 Claims**

1. A sanitary diaper handling apparatus, comprising:

a portable lid-like cover member, which cover member is configured and arranged as to be removably matable with an open-top container capable of receiving and storing soiled diapers, said cover member being of sufficient size to cover an area bounded by the opening of a conventional toilet bowl and having defined therein first and second openings within a portion of the cover member coincident with said area when the cover member is placed on said toilet bowl or said container;

is a pair of flexible, protective gloves; and,

means securing said protective gloves to the perimeter of said first and second openings, said cover member having a cross-sectional shape with said protective gloves depending therefrom that washing of diapers may be performed in said toilet bowl when said cover member is placed thereon, and further permitting transportation and handling of soiled diapers by a user between the container and said toilet bowl, without skin contact between said user and the diapers.



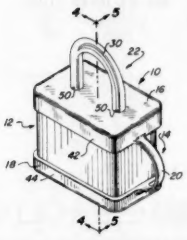
3,858,419
TWO-PART PROTECTIVE COVER FOR PADLOCKS

Marshall D. Hampton, 2125 S. Ammons, Lakewood, Colo. 80227

Filed Dec. 3, 1973, Ser. No. 421,418

Int. Cl. E05b *67/38*

U.S. Cl. 70—55 **7 Claims**

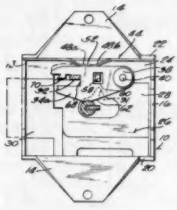


1. A protective cover for padlocks having a body, an inverted U-shaped shackle emerging from the top of the body and means in the bottom of the latter for unlocking the shackle which comprises: a sleeve open at both ends sized to accept the body through the opening in the bottom thereof and define a casing covering its walls; a lid detachably connectable to the top of the sleeve as a cover for the top of the body, said lid having at least one aperture therein positioned and adapted to pass the shackle; a base detachably connectable to the bottom of the sleeve as a removable cover for the bottom of the body; and, a flexible connector interconnecting the lid and base externally of the sleeve cooperating therewith to define a unitary subassembly, said connector being effective to permit removal of the base while leaving same attached to the lid in order to gain access to the bottom of the body.

3,858,420
LOCK MECHANISM

Dwight L. Sallis, Menomonee Falls, and Nathan L. Berkowitz, Milwaukee, both of Wis., assignors to Lock Corporation of America, Milwaukee, Wis.

Filed Dec. 6, 1973, Ser. No. 422,434
Int. Cl. E05b *35/10, 15/04*
U.S. Cl. 70—81 **15 Claims**

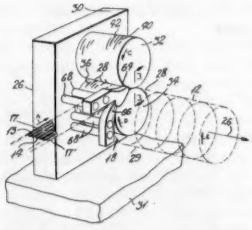


1. A lock mechanism mounted in a lock casing comprising:
a bolt member slidably mounted in the lock casing;
a plurality of latch levers pivotally mounted in the casing and adapted to restrain movement of said bolt member when biased in one direction;
spring means for biasing said latch levers in said one direction, said spring means comprising a spring member having a frame portion, a plurality of spring arms formed integrally therewith, said spring arms arranged in two banks with the spring arms of one bank extending towards and in staggered relationship with the spring arms of the other bank.

3,858,421
HELICAL DUCTING MEANS AND METHOD FOR FORMING THE SAME

Cecil H. Wood, 60A Industrial Rd., Richmond Hill, Ontario, Canada

Filed June 6, 1972, Ser. No. 260,276
Int. Cl. B21c *37/12*
U.S. Cl. 72—50 **7 Claims**

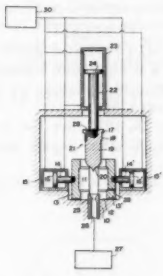


1. The process of fabricating duct by winding soft alloy ribbon stock into helical rings which have been pre-corrugated longitudinally at least along the opposite elongated edges thereof said rings being generated by the rotation of said stock and by interlocking while so rotating, the adjacent leading and trailing edges of successive co-axial said rings as viewed relative to the axial direction of duct- fabrication by means of a continuous seam, which process comprises the step of exerting a longitudinal tensile effort upon said stock and upon the trailing corrugated edge only of the last complete trailing ring while said leading and trailing edges thereof respectively are passing in a substantially straight-line direction through a stationary seam-forming die-set,
i. said leading edge lapping said trailing edge,
ii. the axis of said die-set being generally tangent to said last trailing ring,
iii. said tensile effort being applied
a. to said stock and
b. to said last complete ring trailing edge only closely adjacent the output end of said die-set.

3,858,422
JET MOLDING DEVICE

Hiroshi Tominaga; Masanobu Takamatsu, Yokohama, and Kohei Adachi, Chigasaki, all of Japan, assignors to Tokyu Sharyo Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Aug. 17, 1973, Ser. No. 389,080
Int. Cl. B21d *26/06*
U.S. Cl. 72—56 **5 Claims**



1. A molding device for jet-forming a workpiece comprising a mold having a workpiece forming cavity, said mold comprising a plurality of discrete die segments radially adjustable about a common axis, means for radially adjusting said plurality of discrete die segments, an axially displaceable tapered jet spray guide member coaxially arranged with said plurality of discrete die segments and positionable within said mold for sealing an end thereof, said jet spray guide member being introduceable into said workpiece forming cavity for deflecting a jet stream against a workpiece for thereby deforming said workpiece to the contour of said workpiece forming cavity, a jet port communicating with said workpiece forming cavity for introducing a jet stream therein for deforming said workpiece, said jet spray guide member and jet port being coaxially arranged, said jet port having a configuration substantially complementary to said taper of said jet spray guide member, means for sealing another end of said mold, means for axially displacing said tapered jet spray guide member and means for applying an impact pressure on liquid introduced into said jet port.

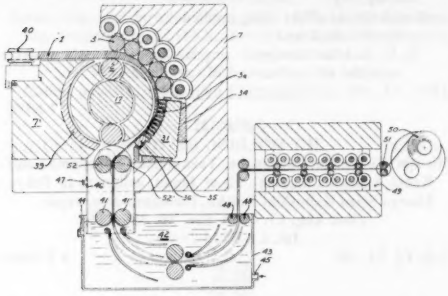
3,858,423
ANVIL ROLLBED CYCLIC MILL AND METHOD OF ROLLING

Tadeusz Sendzimir, P.O. Box 1350, Waterbury, Conn. 06720

Filed Dec. 14, 1972, Ser. No. 315,099
Int. Cl. B21b *13/20*
U.S. Cl. 72—189 **30 Claims**

1. Process of reducing the thickness of an elongated workpiece by plastic deformation which includes the steps of causing a beam-backed work roll concurrently to traverse, and gradually approach, an anvil comprising a plurality of rounded crests disposed parallel to said work roll and capable of a small amount of reciprocatory movement in the direction of travel of the workpiece while the work roll is in operative engage-

ment with said workpiece, and back while the work roll is out of engagement therewith, while feeding said workpiece into



the space between said roll and said anvil by extraneous means engaging the non-reduced portion of the workpiece.

3,858,424

SPLIT TYPE MULTISTAGE ROLLING MILL

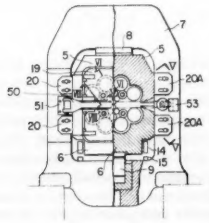
Toshiyuki Kajiwara; Kakichi Fukui; Katsuji Mita, all of Hitachi, and Akira Yamauchi, Takahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 26, 1973, Ser. No. 326,858

Claims priority, application Japan, Jan. 28, 1972, 47-010767

Int. Cl. B21b *13/14, 29/00*

U.S. Cl. 72—242 **10 Claims**



1. A multistage rolling mill having a roll arrangement of the Sendzimir cluster roll system in which each of an upper and lower half roll grouping has two drive rolls, respectively, the improvement comprising: an upper inner housing carrying therein said upper-half roll group; a separate lower inner housing carrying therein said lower-half roll group; a separate integral one piece outer housing encompassing and mounting therein said upper and lower inner housings; pass line adjusting means between one of said inner housings and said integral outer housings for providing adjusting vertical bodily linear movement between said one inner housing and said outer housing; and a rolling reduction adjusting means between the other inner housing and said integral outer housing for providing adjusting vertical bodily linear movement between said other inner housing and said outer housing separately from said pass line adjusting means.

3,858,425

STRAIGHTENING MACHINE WITH OVERLOAD RELEASE

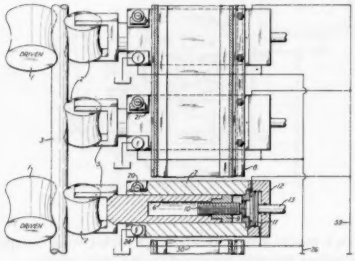
Elbert Gordon Thompson, State College, Pa., assignor to Sutton Engineering Company, Pittsburgh, Pa.

Filed Dec. 6, 1973, Ser. No. 422,278

Int. Cl. B21b *33/00*

U.S. Cl. 72—245 **7 Claims**

1. A straightening machine comprising a first row of rolls, a second row of rolls cooperating with those in the first row to form a pass for workpieces to be straightened, supports connected to the second row rolls and extending radially thereof back away from them, means supporting said supports for longitudinal adjustment, adjusting screws threaded in the rear ends of said supports, pistons secured to the rear ends of the screws, stationary fluid pressure cylinders containing said pistons, rotatable shafts slidably mounted in the rear ends of the cylinders and connected with the screws for turning them to adjust said supports, a conduit connected with each cylin-



der behind its piston, means for supplying fluid under a predetermined high pressure to the conduit to hold the pistons against the front ends of their cylinders, and fluid pressure actuated means connected with said conduit and actuated by an increase in said fluid pressure in the conduit caused by rearward movement of said roll supports and pistons in response to excessive pressure of a workpiece against the rolls in said second row to release said increased fluid pressure until said excessive pressure is removed, whereby to maintain said predetermined pressure substantially constant.

3,858,426

EXTRUSION PRESS TOOL FOR THE PRODUCTION OF HOLLOW SECTIONS

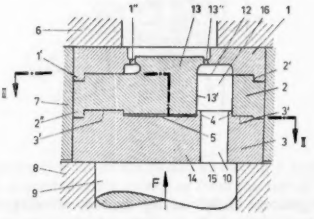
Albrecht Kuske, Clausthal-Zellerfeld, and Dieter Wanders, Massenhausen, both of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed July 19, 1973, Ser. No. 380,546

Claims priority, application Germany, Aug. 11, 1972, 2239660

Int. Cl. B21c *25/04*

U.S. Cl. 72—269 **15 Claims**



1. An extrusion tool having an extrusion direction, for use in the manufacture of hollow metal sections having inner and outer contours, comprising, in combination:

a die cap having a bottom surface with respect to said extrusion direction and a top surface and including a hollow chamber having inner bearing surfaces for forming the outer contour of said sections in said chamber,

a core having a bottom surface and having at least one mandrel protruding into said chamber, core webs supporting said mandrel, said core abutting said die cap

bottom surface and cooperating with said bearing surfaces for forming the inner contours of said sections, said core webs defining openings, and a core shielding plate abutting said core bottom surface and including at least one aperture defined therein communicating with said openings, said core shielding plate and said core defining a stress relieving gap therebetween in the region facing said mandrel, whereby the forces against said core shielding plate by metal being extruded are transmitted primarily through the region of said core around said gap so that forces transmitted from below said mandrel to said mandrel are minimized and said mandrel is less likely to be damaged during the extrusion.

3,858,427

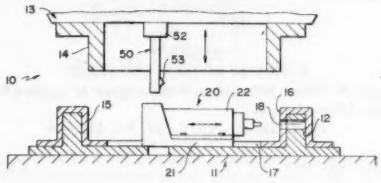
DIE PUNCH FOR SHEET METAL FORMING PRESS

Fred Euteneuer, 32021 Claeys, Warren, Mich. 48093, and Detlef Marburg, 11298 Afton, Southgate, Mich. 48195

Filed Aug. 8, 1973, Ser. No. 386,649

Int. Cl. B21d *28/00*

U.S. Cl. 72—334 **5 Claims**



1. A die punch for use in a press having a press bed part for supporting a die upon which a sheet metal workpiece is die formed with a wall portion arranged approximately perpendicular to the bed part, e.g., a vertical wall portion and a horizontal bed part, and a movable press ram part, which is movable towards and away from the bed part, carrying a corresponding die for cooperative mating with the bed press die for forming such workpiece wall portion, with the die punch functioning to pierce an opening such as a hole, slot or notch in said wall portion during the retraction, that is, movement away, of the movable press ram part from the bed part after the workpiece is formed between the dies, comprising:

a punch support base arranged for fixed position mounting upon the press bed part;

a punch slider having a forward end upon which a punch element is secured, and a rear end, and means slidably mounting the punch slider upon the punch support base for slidable endwise movement relative to the punch support end, that is, back and forth slidable movement along the direction of the axis of the punch element for piercing the wall portion and for retracting therefrom;

means for forcibly moving the slider in its wall portion piercing direction, including a cam member pivotally secured to the rear end of the slider upon a pivot axised perpendicular to the direction of movement of the slider; said cam member having a roughly V-shaped body portion with the apex of the V extending rearwardly of the slider to thereby form an upper, downwardly and rearwardly sloped face, that is, generally facing towards the movable press ram part, and a lower downwardly and forwardly sloped face, that is, generally facing towards the press bed part;

and said cam member having an integral, upper lever portion extending between said pivot and the forward edge of said cam member upper face, and said slider having a stop shoulder against which the forward edge of said lever is normally abutted;

and a slider drive means formed of an elongated member having an end arranged for securement to the movable press ram part for movement therewith, and an opposite end portion having a drive cam with a forwardly pointing V-shaped cam positioned to engage said cam member upper face during movement of the press ram part towards the press bed part for thereby pivotally swinging the cam member so that its lever portion moves rearwardly away from said stop shoulder portion, whereby the slider remains stationary relative to its support base, and for engaging the cam member lower face during movement of the press ram part away from the press bed part for thereby forcing the cam lever forwardly against the stop shoulder portion and thereby forcibly moving the slider forwardly to cause the punch element to operate against said wall portion after the wall portion is die formed.

3,858,428

ROLLING OF METAL

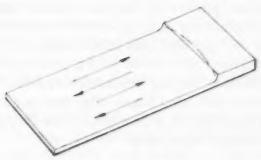
Raymond Thompson, Dore, England, assignor to Osborn Steels Limited, Ecclesfield, Sheffield, England

Filed Aug. 10, 1973, Ser. No. 387,530

Claims priority, application Great Britain, Aug. 21, 1972, 38898/72

Int. Cl. B21d *31/00*; **B21b** *1/38*; **B21k** *3/04*

U.S. Cl. 72—363 **4 Claims**



1. In a method of producing a turbine blade and integral root portion, the step of producing an elongate blade blank element and integral root blank portion by placing two metal plates together in overlapping relation so that at least one of said plates extends beyond the other, entering said plates together into the gap between a pair of rolls and performing a lengthwise rolling operation so that each plate indents the other over the area by which they overlap each other to form in at least one of said plates, a relatively thin elongate blade blank element integral with a relatively thick root blank portion, said blade element and root portion being separated by a sudden transition portion normal to both said blade element and root portion, so that in said one plate continuous grain flow is produced along the indented area which forms the part which constitutes said elongate blade blank element and longitudinally of the part which constitutes said relatively thicker integrally formed root blank portion despite the transition between the blade blank element and the integral root blank portion in the direction in which rolling has been effected being relatively sudden, and subsequently separating said plates from each other.

3,858,429

APPARATUS AND PROCESS FOR FABRICATING REAR AXLE HOUSINGS FOR MOTOR VEHICLES

Helmut Winkler, Meerbusch-Osterath; Gunter Seifert, Leverkusen; Hans Moll; Otto Oeckl, both of Munich, and Eberhard Werner, Leverkusen, all of Germany, assignors to Eumuco Aktiengesellschaft fur Maschinenbau, Leverkusen and Maschinenfabrik Augsburg-Nurnberg Akiengesellschaft, Munchen, both of, Germany, part interest to each

Division of Ser. No. 187,667, Oct. 8, 1971, Pat. No. 3,793,703.
This application Nov. 1, 1973, Ser. No. 411,866
Claims priority, application Germany, Oct. 10, 1970, 2049889

Int. Cl. B21d *43/02*

U.S. Cl. 72—405 **10 Claims**

1. A forming apparatus for the manufacture of elongated concave members, a pair of which when assembled form a rear axle and differential housing for vehicles, said apparatus comprising

a. a forging press including a pair of dies,

b. one of said dies having a substantially horizontal upwardly facing surface with a plurality of generally parallel longitudinal forging impressions for shaping a forge billet in a corresponding series of sequential forging steps into a flat preshaped blank for later forming into a finished member, and

c. means, arranged to move along a linear, horizontal path in a direction parallel to said die surface and transverse to said longitudinal forging impressions for contacting said blank and pushing said blank sequentially from each of said forging impressions to the next until said blank reaches the last forging impression and for withdrawing from contact with said blank after pushing said blank to each forging impression and before the forging operation at each forging impression.

3,858,430

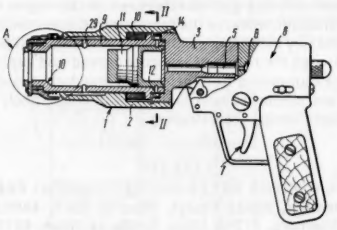
REPEATED-ACTION SINGLE-IMPACT HAMMER

Sergei Grigorievich Kushnarenko, ulitsa Chkalova 13, kv. 7; Vadim Grigorievich Kononenko, ulitsa Chkalova 15, kv.12; Vyacheslav Viktorovich Kollerov, ulitsa Gagarina, 38, kv. 60; Anatoly Sergeevich Morgolenko, ulitsa Chkalova, 15; Vladimir Mikhailovich Alimochkin, ulitsa Lermontovskaya, 26, kv. 4; Albert Ivanovich Orekhov, poselok Budy, ulitsa Oktyabrskaya, 113, all of Kharkov; Jury Mikhailovich Komendantov, ulitsa Tallinskaya, 23, kv. 14, Leningrad; Lev Petrovich Vasilchenko, ulitsa Vododarskogo, 57a, kv. 10, Kharkov; Nikolai Mikhailovich Parkhomenko, ulitsa Otakara Yarosha, 23, kv. 4, Kharkov, and Nikolai Nikolaevich Anistarov, ulitsa Pomerovskaya, 4, kv. 1, Kharkov, all of U.S.S.R.

Filed May 1, 1973, Ser. No. 356,195
Int. Cl. B21j *15/18*

U.S. Cl. 72—430 **3 Claims**

1. A repeated-action single-impact hammer for heading stemmed rivets, comprising: a housing; a cylinder mounted in said housing; a piston received in said cylinder for translatory reciprocating motion so as to deliver an impact upon a rivet; means for driving said piston, positioned in said housing; a mechanism effecting centering of said cylinder with respect to the rivet, mounted on an end portion of said cylinder, adjoining in operation of heading the rivet, said mechanism being radially movable into contact with the stem or the rivet and back into the initial position thereof; and radially resilient means for retaining said piston in the initial position thereof,



mounted on the other end portion of said cylinder, opposite to said one end portion thereof.

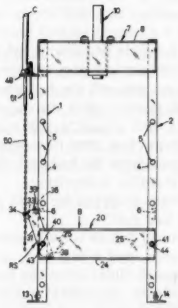
3,858,431

H-FRAME HYDRAULIC PRESS

Douglas P. Miller, Milwaukee, Wis., assignor to Applied Power Inc., Milwaukee, Wis.

Filed Mar. 25, 1974, Ser. No. 454,076
Int. Cl. B21j *13/04*

U.S. Cl. 72—448 **8 Claims**



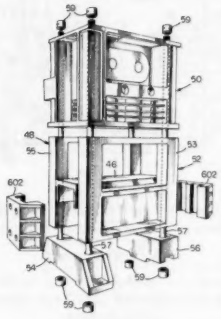
1. An H-frame hydraulic press comprising, two spaced apart vertical members, an upper brace rigidly securing said members together at their upper ends, a generally horizontal work support bed extending between said vertical members; said bed including a cantilever beam and a roller support member rigidly fixed to one end of said beam, said roller support member engaging one of said vertical support members, rollers carried by said roller support member and for engaging said one of said vertical members and thereby supporting said beam in cantilever fashion, and means for rigidly securing said beam to each of said vertical members, a fluid operated cylinder secured adjacent the top of said press, and a tension member connected between said hydraulic cylinder and said bed whereby the latter can be vertically positioned along said vertical members by said hydraulic cylinder and rigidly fixed with said vertical members in any one of a number of positions.

3,858,432

PRESS STRUCTURE

John E. Voorhees, Sidney, and Donald J. Hemmelgarn, Minster, both of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed Sept. 5, 1972, Ser. No. 286,272
Int. Cl. B21j *13/04*
U.S. Cl. 72—455 **35 Claims**



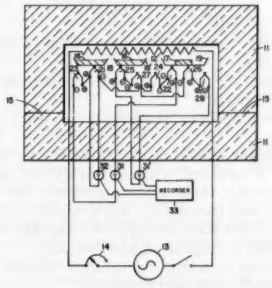
18. In a press having spaced and fixedly interconnected crown and lower portions, a bed member, adjustable toward and away from said crown portion, means in said lower portion operable to clamp and locate said bed member therein, crankshaft means rotatable in said crown portion, piston means slidably guided in elongated cylinders in said crown portion for movement toward and away from said bed member, means operatively connecting said crankshaft means to said piston means, and a slide connected to said piston means at the end thereof nearest said bed member, said piston means forming the sole means supporting and guiding said slide in said press frame.

3,858,433

BASELINE COMPENSATOR FOR DIFFERENTIAL THERMAL ANALYZER

Harold J. Nearhoof, State College, Pa., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Oct. 12, 1973, Ser. No. 406,127
Int. Cl. G01h *25/00*
U.S. Cl. 73—15 B **11 Claims**



1. A device for measuring small differences in temperature between a specimen object and a reference object within a thermally controlled environment, comprising:

1. a first thermal sensing element which produces a potential across its terminals as a function of temperature, the junction of which first thermal sensing element is thermally in contact with the specimen object whose temperature is to be compared with the temperature of the reference object within the thermally controlled environment;
2. a second thermal sensing element which produces a potential across its terminals as a function of temperature, the junction of which second thermal sensing element is removed from the specimen object and thermally in contact with the reference object, the junction of said second thermal sensing element being in fixed spacial relationship to the junction of the first thermal sensing element, within the thermally controlled environment but relatively distant from the junction of the first thermal sensing element;
3. a third thermal sensing element which produces a potential responsive to the temperature in the vicinity of the speciment object across its terminals as a function of temperature, the junction of which third thermal sensing element is removed from the specimen object and the reference object, the junction of said third thermal sensing element being in fixed spacial relationship to the junction of the first thermal sensing element, within the thermally controlled environment and relatively close to the junction of the first thermal sensing element;
4. a fourth thermal sensing element which produces a potential responsive to the temperature in the vicinity of the reference object across its terminals as a function of temperature, the junction of which fourth thermal sensing element is removed from the specimen object and the reference object, the junction of said fourth thermal sensing element being in fixed spacial relationship to the junction of the second thermal sensing element, within the thermally controlled environment and relatively close to the junction of the second thermal sensing element, the fixed spacial relationship of the fourth thermal sensing element to the second thermal sensing element being thermally similar to the fixed spacial relationship of the third thermal sensing element to the first thermal sensing element;
5. means connecting said first, second, third, and fourth thermal sensing elements electrically in series, the thermal sensing elements each having a negative terminal, a junction, and a positive terminal such that a change in temperature of the junction of each thermal sensing element produces a change in potential between the positive and negative terminals; the thermal sensing elements being connected such that in response to changes in temperature in the same direction, the fourth thermal sensing element produces a change in potential augmenting that of the first thermal sensing element, and the second and third thermal sensing elements both produce changes in potential in opposition to that produced by the first thermal sensing element; and
6. means for measuring the difference in potential between one end of the series of four thermal sensing elements and the other end of the series of four thermal sensing elements, and for interpreting said difference in potential as a temperature differential.

3,858,434

CONTROL SYSTEM FOR QUIESCENT BREATH TESTER

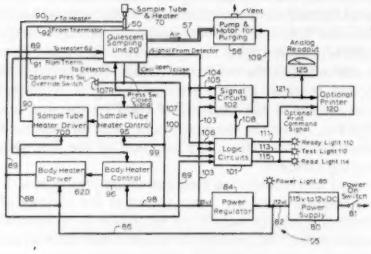
Joseph P. Hoppesch, Schaumburg; Kenneth W. Padgitt, Arlington Heights, and Donald H. Ward, Glen Ellyn, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 11, 1972, Ser. No. 313,891
Int. Cl. G01n *31/00*
U.S. Cl. 73—23 **6 Claims**

1. In a breath tester of the type having a breath holding chamber, an alcohol detecting element for producing a signal in response to the alcohol in its gaseous environment, means

for selectively shielding and unshielding the element from the chamber, and purge means for at least, purging the gaseous environment about the detecting element; a control system comprising:

first means for sensing and signaling the shielded and unshielded state of the shielding means; and

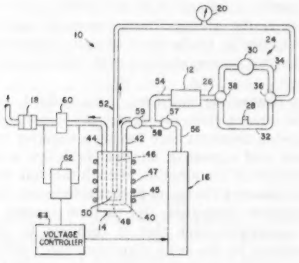


second means responsive to the said first means for operating said purge means for a preset period in response to the change of the state of the shielding means from unshielded to shielded.

3,858,435
GAS CHROMATOGRAPH

Mario R. Stevens, Glendora, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Mar. 5, 1973, Ser. No. 338,287
Int. Cl. G01n *31/08*
U.S. Cl. 73—23.1 **15 Claims**



1.

An analysis system comprising:

a closed hydrogen circuit including a gas chromatographic column and an electrolytic hydrogen carrier gas generator-separator including a selectively hydrogen permeable anode electrode and cathode electrode, the inlet to the column being connected to the hydrogen carrier gas output from said cathode and the outlet from said column being connected to a first inlet end of said anode;

sample inlet means connected to said circuit upstream of said column inlet;

an auxiliary electrolytic hydrogen generator having a sweep gas hydrogen output connected to the first end of said anode;

detector means connected to the second end of said anode for receiving and analyzing a dispersion of samples in said sweep gas;

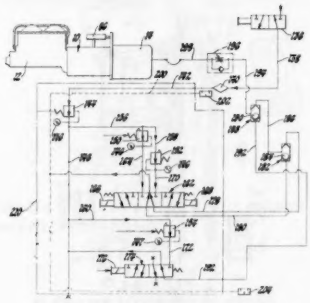
pressure detector means for sensing the pressure of the second outlet end of said anode and developing an electrical signal indicative thereof; and

electrical controller means receiving said signal for controlling the output of said auxiliary generator.

3,858,436
VEHICLE BRAKE LEAK TESTING SYSTEM AND METHOD

Lawrence A. Hines, Jr., St. Clair Shores, and Walter M. Gaudette, Jr., Royal Oak, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1973, Ser. No. 406,116
Int. Cl. G01m *3/02*
U.S. Cl. 73—39 **5 Claims**



1. A vehicle brake leakage testing system comprising a hydraulic circuit including a master cylinder assembly containing a piston for pressurizing the closed hydraulic circuit comprising in combination: an adaptor fitting upon said master cylinder; a plunger slidably mounted in said adaptor; means actuating said plunger engaging said master cylinder piston and pressurizing the fluid in said hydraulic brake circuit to a predetermined pressure in relation to the amount of movement of said plunger; an electrical control circuit automatically actuating said plunger actuating means to subject the brake system to a predetermined pressure test sequence; means sensing movement of said master cylinder piston during said test sequence; and electrical means in said control circuit comparing movement of said piston with predetermined acceptable values and indicating whether the brake system meets a predetermined standard during each phase of the test sequence.

3,858,437
ACOUSTIC TEST METHOD AND APPARATUS

Jacek Jarzynski, Bethesda; Howard B. McLelland, Rockville, and Hyman Kessler, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 27, 1973, Ser. No. 345,412
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.5 R **15 Claims**

1. An acoustic test apparatus for ultrasonic testing of materials comprising:

a first transducer for transmitting acoustic energy through the test material;

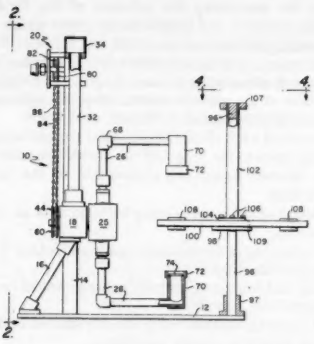
a second transducer for detecting the presence of the acoustic energy;

carriage means supporting said first and said second transducers in opposed, parallel orientation, said carriage means pivotal about a first, horizontal axis equidistant between said transducers, and a second axis in a plane parallel to the plane through the centerline of said transducers and orthogonal to said first axis;

control means to permit regulation of rotation of said carriage means about said first axis;

adjustment means to control relative counter-rotary pivotal movement of said first transducer with respect to said second transducers about said second axis;

second control means to permit regulation of said pivotal movement; and



adjustable support means for supporting the test material between said first and said second transducers.

3,858,438

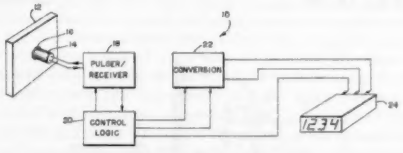
ULTRASONIC-GAGING SYSTEM METHOD AND APPARATUS

Leopold Neumann, Lexington, Mass., assignor to Panametrics, Inc., Waltham, Mass.

Filed Nov. 13, 1972, Ser. No. 306,175

Int. Cl. G01n *29/00*

U.S. Cl. 73—67.9 **10 Claims**



1. A device adapted for interconnection with a transducer operatively connected to an object for generating an absolute analog signal related to the thickness of the object, the transducer transmits vibrations to the object, senses echoes generated by the object and generates echo pulses, said device comprising:

a. pulser/receiver means adapted for interconnection with the transducer for generating driving pulses and for sensing echo pulses;

b. digitally controlled means for generating a first signal defined by the material velocity coefficient of the object;

c. processing means operatively connected to said pulser/receiver means and digitally controlled means, said processing means generating an absolute analog signal related to the material velocity coefficient and echo pulse delay through the object, said absolute analog signal defining the thickness of the object; and

d. digital panel meter means operatively connected to said processing means for presenting said absolute analog signal in digital form;

e. said processing means including

i. first storage means operatively connected to said digitally controlled means for storing a voltage related to said first signal;

ii. first switch means having first and second switching states, said first signal applied to said first storage means when said first switch means is in said first switching state;

iii. amplifier means having at least one input terminal and an output terminal, second and third signals successively presented at said output terminal, said first storage means operatively connected to said input terminal;

iv. second switch means having first and second switching states, said second switch means operatively connected to said output terminal;

v. second storage means operatively connected to said second switch means for storing said second signal as at said output terminal; and

vi. third switch means having first and second switching states, said third switch means operatively connected to said second storage means, said second signal at said output terminal stored on said second storage means when said second and third switch means are in said second switching state, a fourth signal applied to said digital panel meter means via said second storage means when said second switch means is in said second switching state and said third switch means is in said first switching state, said fourth signal being the difference between said second and third signals.

3,858,439

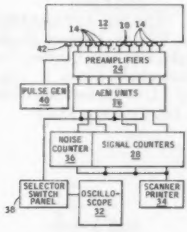
METHOD AND APPARATUS FOR ACOUSTIC EMISSION NON- DESTRUCTIVE TESTING

Yosio Nakamura, Seabrook, Tex., assignor to General Dynamics Corporation, Fort Worth, Tex.

Continuation-in-part of Ser. No. 118,855, Feb. 25, 1971, abandoned. This application Sept. 26, 1973, Ser. No. 400,766

Int. Cl. G01h *1/00*

U.S. Cl. 73—71.4 **11 Claims**



1. A system for monitoring structural failures and the growth of flaws in structures which compriss:

a plurality of sensors positioned on a structure surface with at least one master sensor surrounded by a plurality of slave sensors;

each master and slave sensor adapted to emit an electrical signal in response to a received acoustic pressure wave;

acoustic emission monitoring means for receiving signals from said master and slave sensors and producing output signals corresponding only to acoustic pressure waves received by a master sensor before being received by any slave sensor.

3,858,440

STRESS TRANSDUCER MOUNTING AND METHOD OF ADJUSTMENT

Tadas Budraitis, Midlothian, Ill., assignor to Productronix, Inc., Oak Forest, Ill.

Filed Nov. 29, 1972, Ser. No. 310,403

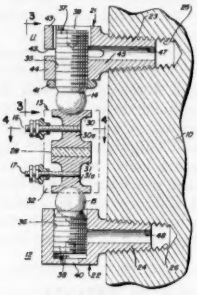
Int. Cl. G01b *7/16*

U.S. Cl. 73—88.5 R **14 Claims**

1. A mounting for a piezoelectric transducer which measures the deformation of a member subject to a load, comprising:

a pair of brackets secured to said member and having facing supporting surfaces spaced apart along a line parallel with the deformation to be measured; and

means carrying the piezoelectric transducer between the supporting surfaces of the brackets, including a resilient conical washer interposed between one of said brackets



and said transducer having a stress-deformation ratio which is less than that of said member, and which deflects on deformation of said member, whereby only a portion of the deformation of the member is transmitted to the piezoelectric transducer and the force exerted on the transducer is less than that corresponding to the deformation of the member.

3,858,441

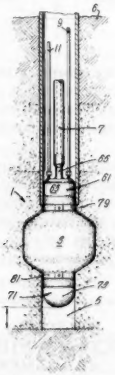
SOIL TESTING APPARATUS

Henri Jules Comeau, Ville St. Laurent, Quebec, Canada, assignor to Henri Jules Comeau, Quebec, Canada and Clarence W. Welti, Glastonbury, Conn.

Filed July 12, 1973, Ser. No. 378,651

Int. Cl. G01n *33/24*

U.S. Cl. 73—88 E **5 Claims**



1. A system for the in situ measurement of the mechanical properties of soils in the ground comprising;

a probe means comprising a generally cylindrical inflatable membrane;

means for inserting the probe means in a bore hole in the ground;

means for filling the membrane with a non-compressible fluid;

means for supplying measured volumes of said non-compressible fluid to said membrane under pressure after it is filled to thereby inflate said membrane; and

means for measuring the volumes of the fluid supplied under pressure and the pressures under which the corresponding volumes are supplied;

characterized in that said membrane comprises a plurality of longitudinal strands extending in the longitudinal direction of the membrane and disposed with equal horizontal spacing between strands;

the length of each of said longitudinal strands being substantially equal to the length of the membrane, said longitudinal strands being non-expandable in the longitudinal direction;

said longitudinal strands being embedded in an elastomeric material;

and a plurality of horizontal strands embedded in said elastomeric material;

each of said horizontal strands being joined to two adjacent longitudinal strands;

said horizontal strands being equally spaced in the longitudinal direction of said membrane;

said horizontal strands all being of equal length;

whereby said membrane is substantially non-inflatable in the longitudinal direction of the membrane and is inflatable only to a controlled extent in the transverse or radial direction thereof.

3,858,442

BREAK DOWN TESTER

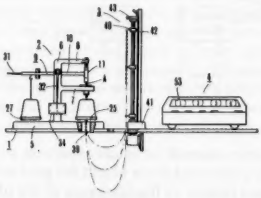
Wataru Nozaki, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed June 28, 1971, Ser. No. 157,318

Claims priority, application Japan, June 26, 1970, 45-55143

Int. Cl. G01n *3/14*

U.S. Cl. 73—94 **28 Claims**



1. A breakdown tester for relatively small, brittle, apertured articles comprising:

a stationary base;

a measuring unit including an integral supporting arm and calibrating arm supported by a center pin mounted on said base;

a test table disposed between said supporting arm and said stationary base for holding therebetween a test piece;

electrical means coupled to said supporting arm for detecting a slight lowering of said supporting arm when the test piece is broken;

a loading unit including at least one elongated flexible counter weight means having one end connected to said supporting arm, loading means for moving the other end of said counter weight means for increasing the effective weight of said flexible counter weight means applied on the test piece, and means for converting the effective weight into an electric signal; and

an operating unit including means responsive to said electric signal for displaying the load applied to said test piece by said counter weight means and means responsive to said electrical means for controlling the operation of said loading means whereby, when said test piece is broken, the operation of said loading means is stopped by a signal

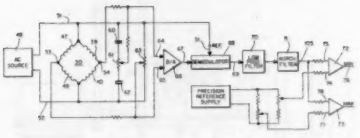
from said electrical means detecting said slight lowering of said supporting arm.

3,858,443

TORQUE MEASURING AND CONTROL SYSTEM

Harry E. Roberts, III, Wilmington, Del., and Thomas H. Carey, Chester, Pa., assignors to Columbia Research Laboratories, Inc., Woodlyn, Pa.

Filed June 21, 1972, Ser. No. 264,781
Int. Cl. G01l *3/02*
U.S. Cl. 73—136 R **2 Claims**



1. A torque measuring and control system to be employed with a power source having a shaft to deliver torque comprising in combination: first and second end means, each having an aperture therein, said first end means formed to be secured to said power source, said second end means formed to be secured to a reference means which remains substantially unaffected by a reaction of said power source; tube means having an aperture therethrough, said tube means disposed to couple said first end means to said second end means and to align its aperture with said apertures of said first and second end means to enable said shaft to pass therethrough; first pair of electrical coils with each coil mounted on a first yoke with a space therebetween, said first yoke being secured to one of said end means; first vane means located within said space between said first pair of electrical coils and mounted on said other end means; second pair of electrical coils with each coil mounted on a second yoke with a space therebetween, said second yoke secured to one of said end means and disposed approximately 180° from said first yoke; second vane means located within said space between said second pair of electrical coils and mounted on said other end means opposite from said second yoke; said first and second pairs of electrical coils connected in a bridge circuit which provides an unbalanced a.c. signal as a measure of the torque experienced by said first end means; correction circuitry connected to said bridge circuit to provide signals thereto wehreby its no load signal will be nullified; demodulating circuit means connected to said bridge circuit to receive a.c. output signals therefrom and connected to said a.c. power source to transform said a.c. output signals to a pulsating d.c. signal which is at twice the frequency of the signal from said a.c. power source; low pass filter means connected to said demodulating circuit means to pass only a certain signal therethrough having a component which is twice the frequency of the signal from said a.c. power source; and notch filter means connected to said low pass filter means to remove said last mentioned component and thereby provide a highly defined d.c. signal representative of the output of said bridge.

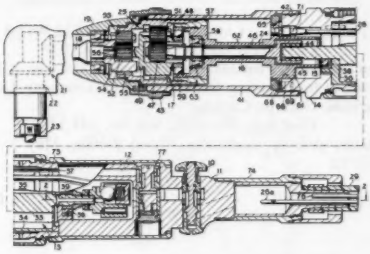
3,858,444

ANGLE NUT RUNNER WITH INTEGRAL TORQUE TRANSDUCER MEANS OF OBTAINING VALUE OF DELIVERED TORQUE

William K. Wallace, Barneveld, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,105
Int. Cl. B25b *23/14*
U.S. Cl. 73—139 **6 Claims**

1. A nut runner having integral transducer means for transmitting to an external strain gage indicator electrical instrument a reaction torque signal, comprising: an air driven torque motor; reduction gear means connected for transmitting torque of the motor to a workpiece; an internal ring gear engaged by and relative to which the reduction gear means rotates in transmitting the torque of the motor to the work; an elongated reaction torque responsive transducer; a housing containing the motor, gear means, ring gear, and the transducer; means fixing a forward end of the transducer to a rear



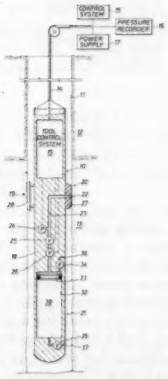
end of the ring gear; other means fixing a rear end of the transducer to the housing; a handle attached to the housing in axial extension thereof; an electric cable confined entirely within the housing and the handle; and an electrical outlet plug mounted to the handle adapted for plug connection with the external strain gage indicator electrical instrument, the cable being connected at one end with the transducer and connected at its other end with the outlet plug.

3,858,445

METHODS AND APPARATUS FOR TESTING EARTH FORMATIONS

Harold J. Urbanosky, Pearland, Tex.

Filed Mar. 20, 1973, Ser. No. 343,082
Int. Cl. E21b *47/12*
U.S. Cl. 73—155 **13 Claims**



1. A method for investigating earth formations traversed by a well bore and comprising the steps of:

isolating a wall surface of said well bore adjacent to an earth formation believed to contain producible connate fluids from well bore fluids;

communicating an empty sample chamber with said isolated wall surface for inducting a sample of connate fluids from said earth formation into said sample chamber;

regulating the flow of said connate fluid sample as it is inducted into said sample chamber by imposing a progressively-increasing restraining force on said inducted connate fluid sample for correspondingly increas-

ing the pressure of said connate fluid sample as it continues to enter said sample chamber; and

monitoring the pressure of said connate fluid sample for obtaining at least a first pressure measurement indicative of the admission of said connate fluid sample into said sample chamber.

3,858,446

VELOCITY MEASUREMENT SYSTEM WITH SYNCHRONIZED DEMODULATION

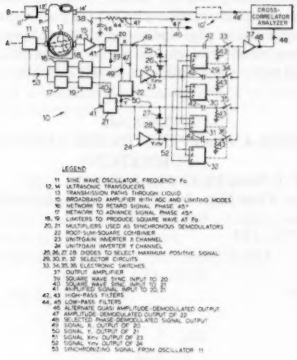
Ralph Seymour Flemons, Peterborough, Ontario, Canada, assignor to Canadian General Electric Company Limited, Toronto, Ontario, Canada

Filed Apr. 10, 1973, Ser. No. 349,742

Claims priority, application Great Britain, May 1, 1972, 20133/72

Int. Cl. G01f *1/00*

U.S. Cl. 73—194 A **6 Claims**



LEGEND

11 SINE WAVE OSCILLATOR, FREQUENCY Fo
12, 14 ULTRASONIC TRANSDUCERS
13 TRANSMISSION PATHS THROUGH LIQUID
15 BROADBAND AMPLIFIER WITH AGC AND LIMITING MODES
16 AUTOMATIC GAIN CONTROL (AGC) CIRCUIT
17 NETWORK TO ADVANCE SIGNAL PHASE 45°
18, 19 LIMITERS TO PRODUCE SQUARE WAVE AT Fo
20, 21 MULTIPLIERS USED AS SYNCHRONOUS DEMODULATORS
22 ROOT-SUM-SQUARE COMBINER
23 UNITY-GAIN INVERTER X CHANNEL
24 UNITY-GAIN INVERTER Y CHANNEL
25, 26, 27, 28 DIODES TO SELECT MAXIMUM POSITIVE SIGNAL
29, 30, 31, 32 SELECTOR CIRCUITS
33, 34, 35, 36 ELECTRONIC SWITCHES
37 OUTPUT AMPLIFIER
39 SQUARE WAVE SYNC INPUT TO 20
41 SQUARE WAVE SYNC INPUT TO 30, 31
42, 43 HIGH-PASS FILTERS
44, 45 LOW-PASS FILTERS
46 ALTERNATE QUAD AMPLITUDE-DEMODULATED OUTPUT
47 AMPLITUDE-DEMODULATED OUTPUT OF 22
48 SELECTED PHASE-DEMODULATED SIGNAL OUTPUT
49 SIGNAL X OUTPUT OF 20
50 SIGNAL Y OUTPUT OF 21
51 SIGNAL X/Y OUTPUT OF 23
52 SIGNAL Y/X OUTPUT OF 24
53 SYNCHRONIZING SIGNAL FROM OSCILLATOR 11

1. In a system having an input signal varying in dynamic phase relation from a substantially synchronous reference signal, wherein the dynamic phase change relation varies in a phase retarding or a phase advancing sense, the method of providing a conditioned output signal to meet the requirement of having a positive-going value for a selected sense of phase of said input signal, and a negative-going value for the opposite sense of phase change of said input signal, comprising the steps of: modifying said reference signal by generating from it two synchronous reference components having a mutual phase difference of approximately 90°; synchronously demodulating said input signal with reference to said synchronous reference components to provide first and second output signals having amplitudes respectively sine and cosine functions of the phase angle between said input signal and said reference signal; inverting said output signals to provide third and fourth output signals of opposite respective polarity, comparing the four output signals in groups of threes to identify which signal of the four has an instantaneous value and polarity to meet said conditioned output requirement, and switching the identified said signal to a useful output.

3,858,447

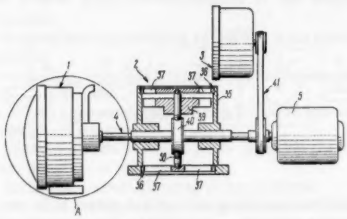
DEVICE FOR DETERMINING THE COMPOSITION OF A LIQUID-GAS MIXTURE IN THE COURSE OF MIXTURE PREPARATION

Boris Evdokimovich Korotenko; Vitaly Borisovich Korotenko, both of Armyansky pereulok, 1/3, kv. 15, and Sergei Kuzmich Leschina, ulitsa Kosmonavtov, 5a, kv. 16, all of Kharkov, U.S.S.R.

Filed June 21, 1972, Ser. No. 265,001

Int. Cl. G01f *9/00*; **G01m** *19/00*

U.S. Cl. 73—196 **3 Claims**



1. A device for determining the composition of a liquid-gas mixture in the course of mixture preparation comprising a gas flow sensing element disposed in the gas stream directed to a liquid-gas mixture preparing unit being tested; a mixture composition indicator comprising a cylindrical chamber; a movable and a fixed radial partition mounted in said chamber along the axis thereof and dividing said chamber into first and second cavities; the first cavity of said chamber receiving a liquid stream directed to said liquid-gas mixture preparing unit being tested; and a centrifugal pump provided with a working chamber and including therein an impeller driven by said gas flow sensing element; means connecting the second cavity of said chamber with the working chamber of said centrifugal pump for producing in said second cavity a circulating liquid stream proportional to the gas stream passing through said gas flow sensing element, said movable partition being subjected to the pressures of the liquid streams and undergoing movement due to differential pressures thereof, and throttling orifices for the passage of both said liquid streams whose ratio is determined by the position of the movable partition; said throttling orifices cooperatively defining an annular slit between the edge of a concentric bore provided in one of the walls of said cylindrical chamber and a tapered surface of a screw concentrically engaged in said bore.

3,858,448

MAGNETIC DRIVE FOR METER

Howard J. Evans, New Kensington, Pa.; Joseph B. Lofink, Lancaster, Ohio, and Joseph A. Bonner, Pittsburgh, Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

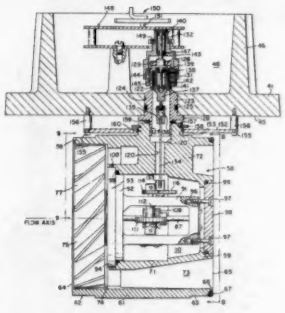
Division of Ser. No. 838,890, July 3, 1969, abandoned. This application July 14, 1971, Ser. No. 162,640

Int. Cl. G01f *1/10*

U.S. Cl. 73—231 R **2 Claims**

1. A fluid meter comprising a housing, a measuring chamber including a fluid flow responsive member within said housing, a register chamber containing a register assembly for registering fluid flow mounted exteriorly of said housing, a casing projecting from said measuring chamber into said register chamber, said casing having an end wall remote from said measuring chamber, unitary shaft means projecting in either direction from said end wall, a driver magnetic coupling member rotatably mounted solely on said shaft means at spaced points thereon within said casing, said driver magnetic coupling member being separate and remote from said fluid flow responsive member and being drive connected therewith, a driven magnetic coupling member rotatably mounted solely

on said shaft means at spaced point thereon outside said casing and in surrounding relationship with respect thereto means



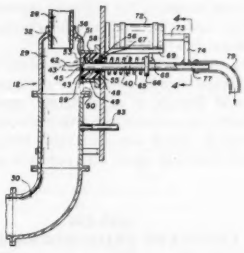
on said driven magnetic coupling member for drive connecting said member to said register assembly.

3,858,449

SAMPLE TAKING APPARATUS

Ernst Singer, 3491 Puget Dr., Vancouver, British Columbia, Canada

Filed Aug. 6, 1973, Ser. No. 385,903
Int. Cl. G01n *1/14*
U.S. Cl. 73—422 R **24 Claims**



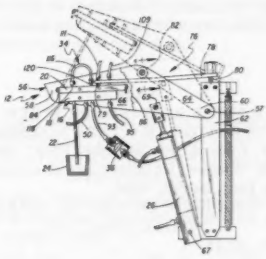
1. Apparatus for periodically taking samples from liquids with or without solids therein and flowing through a conduit, comprising a sampling tube mounted for longitudinal movement and extending towards a conduit for liquid from which samples are to be taken, said sampling tube having an open inner end to be moved into and out of liquid flowing through the conduit, means for moving said tube to shift the inner end thereof into the flowing liquid to permit some of said liquid to flow through the tube and to shift said inner end out of the liquid to stop said flow, a closed sample chamber for receiving the sample liquid, a flexible tube connected to an outer end of the sampling tube and extending to the chamber to direct liquid from said tube into the chamber, and control means in the chamber and operatively connected to said tube moving means to cause the inner end of the sampling tube to be moved out of the liquid when the liquid sample in the chamber reaches a predetermined volume.

3,858,450

SAMPLE MIXING AND METERING APPARATUS

Alan Richardson Jones, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 191,248, Oct. 21, 1971, Pat. No. 3,747,412, and a continuation-in-part of Ser. No. 242,576, April 10, 1972, abandoned. This application Aug. 31, 1972, Ser. No. 285,196. This portion of the term of this patent subsequent to June 26, 1990, has been disclaimed.
Int. Cl. G01n *1/10*
U.S. Cl. 73—423 A **9 Claims**



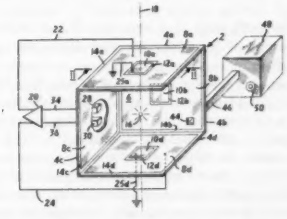
1. A sampling head for use at a sample pickup station, said head comprising a hollow sample pickup probe adapted to be inserted into a sample container at a sample pickup station for extracting a given amount of fluid sample from the container, said pickup probe being movable between a first or sampling position and a second or retracted position, valve means operable upon movement of said probe to said sampling position for connecting said probe to means for withdrawing fluid from the sample container through said probe, means for moving said probe and simultaneously operating said valve means whereby said valve means is operated by said moving means to connect said probe to the withdrawing means at the same time said probe is moved by said moving means to said sampling position, and arm means fixed to a rotatable shaft for supporting said sample pickup probe and said value means spaced from the shaft, said moving means being operatively connected to the shaft.

3,858,451

ACCELERATION DETERMINING METHODS AND APPARATUS

John C. Stiles, Morris Plains, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Apr. 9, 1973, Ser. No. 349,090
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 B **14 Claims**

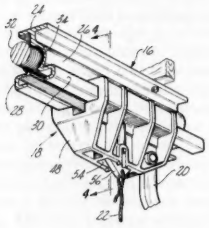


1. A method for use in determining acceleration of an object along an axis comprising the steps of:

a. defining a volume fixedly positioned relative to said object;

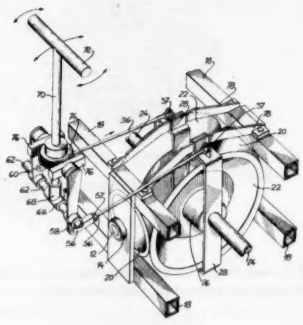
b. disposing in said volume a self-charging mass; then
c. maintaining predetermined pressure in said volume such that said mass exhibits preselected electrical charge; then
d. measuring each displacement of said volume relative to said mass along said axis; and, on each said displacement,
e. establishing in said volume through an agency additional to said mass, an electrostatic field operative to position said mass in preselected position in said volume by disposing at least a pair of opposed electrode means in said volume and establishing a differential voltage therebetween; and providing in each said electrode means a first electrode and disposing a second electrode interiorly thereof and insulated therefrom so that said electrode static fields are conformed to a preselected configuration.

3,858,452
EMERGENCY RELEASE FOR SCREW DRIVE OPERATOR TRAVELER ASSEMBLY
Geoffrey H. Gatland, Walled Lake, Mich., and Kenneth L. Robitaille, Windsor, Ontario, Canada, assignors to Vemco Products, Inc.,, Detroit, Mich.
Filed July 9, 1973, Ser. No. 377,615
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **18 Claims**



1. Apparatus for interconnecting a movable load and a power source for bidirectional displacement of the load along a predetermined path of travel comprising: a substantially rigid rail extending along the predetermined path and defining a screw shaft channel, an inner track internally of the rail, and an outer track externally of the rail; a screw shaft in the channel and connected to a power source for bidirectional rotation; an inner traveler nonrotatably disposed within the inner track and having means substantially permanently engaging the screw shaft such that rotation of the shaft causes linear displacement of the inner traveler along the predetermined path; and outer traveler disposed on the outer track for displacement therealong; means for connecting the outer traveler to the load whereby displacement of the outer traveler results in displacement of the load; the outer traveler being configured to be relatively displaceable over and past the inner traveler in either direction along the predetermined path; and latch means carried by the outer traveler and selectively displaceable between a first position in interfering engagement with the inner traveler wherein the inner and outer travelers are locked together for mutual displacement along the predetermined path and a second position out of interfering engagement with the inner traveler whereby the inner and outer travelers are free for displacement relative to one another along the predetermined path.

3,858,453
DRIVING AND STEERING UNIT
Joseph Henri Grenier, 220 Grande-Allee E., Quebec, and Joseph Emilien Grenier, Newport, Quebec, both of Canada
Filed Sept. 27, 1973, Ser. No. 401,264
Int. Cl. F16h *17/00, 37/06*
U.S. Cl. 74—202 **4 Claims**

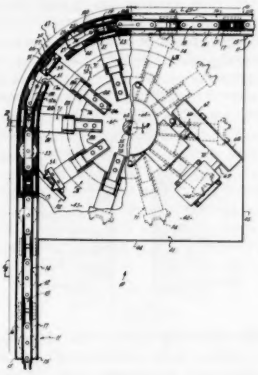


1. In a driving and steering unit having a drive shaft with spaced friction drive cones fixed thereon and a pair of driven cones selectively movable axially of said drive shaft into frictional driven contact with either of said drive cones, the improvement comprising:
a pair of frames pivotally mounted, one on each side of said drive shaft, on a common axis displaced laterally from said drive shaft, said driven cones being journalled on said frames on axes normal to said drive shaft;
a control rod mounted for swinging movement in a plane parallel to said drive shaft and for rotation about its own longitudinal axis; and
connecting means between said control rod and each of said frames, responsive to swinging movement of said rod to swing said frames in respectively opposite directions about said common axis and responsive to rotation of said rod about its axis to simultaneously swing said frames in the same direction about said common axis.

3,858,454
CONVEYOR DRIVE MECHANISM
John R. Duff, Cincinnati, Ohio, assignor to T.K.F., Inc., Cincinnati, Ohio
Filed Oct. 12, 1973, Ser. No. 405,912
Int. Cl. F16h *7/02, 55/30;* **F16g** *13/02*
U.S. Cl. 74—229 **6 Claims**

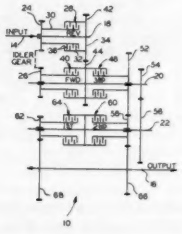
1. A conveyor drive mechanism for a conveyor's chain, said mechanism including
a plurality of paddles interconnected to one another and positioned relative one to the other on a circular locus of points, the paddles extending radially outward from the center of that circular locus of points, and the center of that circular locus of points being the center point of, a corner turn of the conveyor chain, said paddles further being independently mounted for pivotal motion about a pivot axis in the plane of the circular locus of points,
at least one drive dog interconnected with each paddle, each drive dog being adapted to engage the conveyor chain to aid in driving said conveyor chain from one station to another, each drive dog being pivoted into and out of driving engagement with the conveyor's chain on

said pivot axis, and
a power unit connected to the interconnected paddles, said



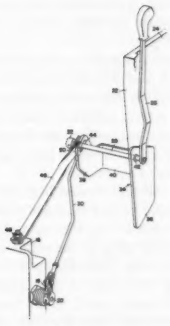
power unit causing said paddles to rotate in a positive manner about the center of the circular locus of points.

3,858,455
TRANSMISSIONS
Ronald L. Sisson, and James E. Shellberg, both of Jackson, Mich., assignors to Clarke Equipment Company, Buchanan, Mich.
Filed Aug. 27, 1973, Ser. No. 392,139
Int. Cl. F16h *3/08*
U.S. Cl. 74—360 **3 Claims**



1. A transmission comprising:
a. an input shaft;
b. a first gear fixed to said input shaft;
c. a first shaft lying in a common plane with said input shaft;
d. a second gear journalled for rotation on said first shaft and drivingly connected with said first gear;
e. a second shaft axially aligned with said input shaft;
f. first clutch means for connecting said input shaft with said second shaft;
g. second clutch means for connecting said second gear to said first shaft for conjoint rotation therewith;
h. a third gear fixed to said second shaft;
i. a fourth gear fixed to said first shaft and in mesh with said third gear;
j. a fifth gear journalled for rotation on one of said first and second shafts;
k. third clutch means for connecting said fifth gear to one of said first and second shafts for conjoint rotation therewith;
l. a third shaft lying in a common plane with said input shaft;
m. an output shaft;
n. a sixth gear fixed to said first shaft;
o. a seventh gear fixed to said third shaft and in mesh with said sixth gear;
p. an eighth gear journalled for rotation on said third shaft and in mesh with said fifth gear;
q. fourth clutch means for connecting said eighth gear to said third shaft for conjoint rotation therewith;
r. a ninth gear journalled for rotation on said third shaft;
s. fifth clutch means for connecting said ninth gear to said third shaft for conjoint rotation therewith;
t. a tenth gear fixed to said output shaft and in mesh with said eighth gear; and
u. an eleventh gear fixed to said output shaft and in mesh with said ninth gear, with said output shaft being vertically aligned with said input shaft.

3,858,456
CONTROL MECHANISM HAVING MEANS COMPENSATING FOR RELATIVE LIMITED MOVEMENT BETWEEN A PAIR OF RELATED STRUCTURES
James Melvin Bahl, Waterloo; Seaton Moon, Cedar Falls, and Michael Keith Magruder, Waterloo, all of Iowa, assignors to Deere & Company, Moline, Ill.
Filed July 16, 1973, Ser. No. 379,891
Int. Cl. G05g *1/04*; **F16c** *35/02*
U.S. Cl. 74—491 **8 Claims**



1. In combination: a first structure, a controllable member carried by said first structure for back-and-forth movement along a defined path, a second structure associated with the first structure for limited relative movement, a control shaft spaced from the controllable member and disposed crosswise of the aforesaid path, an arm fixed to the shaft, a first support mounted on the first structure and extending to the shaft adjacent to the arm, a second support fixed to the second structure and extending to the shaft relatively axially remote from the arm, a first self-aligning bearing journaling the shaft on the first support adjacent to the arm, a second self-aligning bearing journaling the shaft on the second support relatively axially remote from the arm, and link means extending between and connected at opposite ends respectively to the arm and member for transmitting motion to move the member in response to rocking of the shaft.

3,858,457
FOUR-BAR LINK VARIABLE RATIO BRAKE PEDAL MOUNT

Thomas P. Mathues, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 21, 1973, Ser. No. 362,496
Int. Cl. G05g *1/14*
U.S. Cl. 74—512 **2 Claims**

1. A variable ratio brake pedal mount comprising a four-bar link arrangement, said link arrangement including a fixed first link having first and second pivot pins extending transversely thereof in spaced axially parallel relation, a second link pivotally attached at one end to said first link by said first pivot pin and having a third pivot pin extending pivotally and transversely thereof at its other end in axially parallel relation to said first and second pivot pins, a third link pivotally attached at one end to said first link by said second pivot pin and having a fourth pivot pin extending pivotally and transversely thereof at its other end in axially parallel relation to said first and second and third pivot pins,

a fourth link pivotally attached to said second and third links by said third and fourth pivot pins and extending beyond said third pivot pin in the opposite direction from said fourth pivot pin to define a brake pedal lever and having a brake pedal thereon at the end thereof opposite said fourth pivot pin, and a brake apply push rod pivotally attached to said third pivot pin,

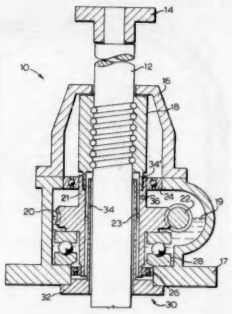
the line intersecting the axes of said first and third pivot pins and lying in the plane of pivotal movement of said second link and the line intersecting the axes of said second and fourth pivot pins and lying in the plane of pivotal movement of said third link intersecting at a point movable toward said third pivot pin at an increasing rate with movement of said brake pedal in the brake apply direction, said point being the instant center of rotation about which said brake pedal moves, thereby increasing the mechanical ratio of the mechanism during brake apply, the mechanical ratio being defined by the ratio of the distance from the brake pedal to said instant center of rotation relative to the distance from the axis of said third pivot pin to the said point of instant center of rotation.

3,858,458
OIL SEAL BARRIER FOR JACKS

Terry Albert Hunter, Peterborough, Ontario, Canada, assignor to Canadian General Electric Company Limited, Toronto, Ontario, Canada

Filed Sept. 24, 1973, Ser. No. 400,398
Int. Cl. F16h *57/02*
U.S. Cl. 74—606 **5 Claims**

1. In a rotary actuator having a casing, a rotary input shaft mounted therein, a gear wheel in driven connection with said input shaft mounted for rotation about an inclined axis, having an elongated output shaft extending therethrough connected in driven relation with the driven gear, the improvement comprising oil dam seal bushing means surrounding said output shaft, in radially spaced relation therefrom, said bushing means being connected in sealing relation with said casing and

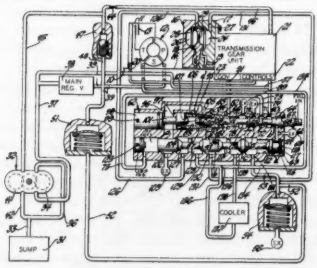


having an axially extending dam portion extending upwardly above the level of an oil bath in which said input shaft rotates, to effectively isolate said output shaft from the oil of the bath.

3,858,459
RETARDER CONTROL

Reece R. Fuehrer, Danville, and Richard B. Anderson, Indianapolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 14, 1973, Ser. No. 360,391
Int. Cl. F16h *47/08*; B60k *21/06*
U.S. Cl. 74—645 **11 Claims**



10. In a transmission: a sump; a torque converter having an inlet and outlet; means to supply fluid from said sump under pressure to said torque converter inlet; a cooler having an inlet connected to the torque converter outlet and an outlet; a low pressure relief valve; retarder means having an inlet, an outlet, a bladed stator and a bladed rotor forming a retarder chamber, said retarder inlet connected to supply fluid to said chamber, said retarder outlet connected to said chamber and said rotor during rotation circulating fluid from said retarder inlet to said retarder outlet and providing retarder power capacity increasing as an exponential function of retarder chamber fill and rotor speed; governor means operatively connected to said rotor providing a rotor speed signal varying as an exponential function essentially solely to rotor speed similar to the power capacity exponential function of rotor speed and control means having a manual control movable from a retarder off position through a minimum to maximum range of retarder on positions, manually controlled valve means connected to said retarder inlet and outlet, said cooler inlet and outlet, said relief valve and said sump and controlled by said manual control in said retarder off position operative to connect said cooler outlet through said low pressure relief valve to sump, to block said retarder inlet and to connect said retarder outlet to sump and controlled by said manual control in said mini-

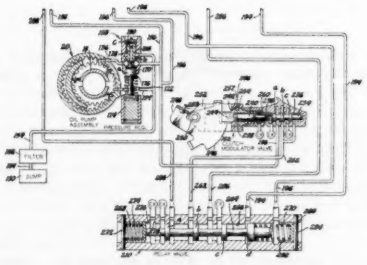
mum to maximum range of retarder on positions operative to connect said retarder outlet to said cooler inlet, to block said cooler outlet from said relief valve and to connect said cooler outlet to supply fluid to said retarder inlet and pressure regulating means connected to said governor means, said manual control means and said retarder inlet to regulate the retarder inlet pressure in response to the retarder inlet pressure and the minimum to maximum range of retarder on positions of said manual control to control retarder inlet pressure by said manual control between a minimum and a maximum controlled pressure valve to control retarder chamber fill with movement of said manual control in said minimum to maximum range of retarder on positions and said speed signal for reducing said controlled pressure value responsive to said rotor speed signal inversely exponentially as a function of rotor speed to provide an employed power capacity increasing as a straighter line function relative to manual control movement and rotor speed.

3,858,460

FOUR SPEED MANUAL TRANSMISSION AND CONTROL

Fred C. Porter, Birmingham, and Laszlo Nagy,. St. Clair Shores, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1973, Ser. No. 415,221
Int. Cl. F16h *3/44*
U.S. Cl. 74—753 **2 Claims**



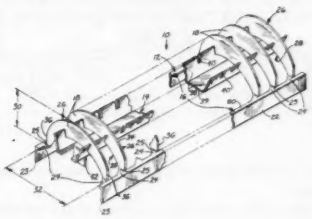
1. A planetary gearing power transmission and control comprising; input means for transmitting power to the transmission; output means for delivering power from the transmission; planetary gearing means for transmitting power from said input means to said output means at a plurality of drive ratios and including first fluid operated clutch means being selectively engageable and disengageable for controlling the establishment of a plurality of forward drive ratios, second fluid operated clutch means being selectively engageable and disengageable for controlling the establishment of a reverse drive ratio and cooperating with said first clutch means for establishing a one to one forward ratio, and a plurality of fluid operated friction drive establishing means being selectively engageable for cooperating with said first and second clutch means for establishing said drive ratios in said planetary gearing means; fluid pressure source means for providing fluid pressure to operate both said clutch means and said plurality of friction drive establishing means; manual selector valve means movable to a plurality of positions for selectively distributing fluid pressure from said source means to said plurality of friction drive establishing means during the establishment of all forward drive ratios except the one to one forward drive ratio and to said second clutch means during the establishment of said one to one forward drive ratio; manually operated clutch modulated valve means in fluid communication with said source means for generating a variable clutch engagement control pressure for selectively controlling the engagement and disengagement of said first and second clutch means; and relay valve means in fluid communication with said manual selector valve means and being positionable in a forward position or a reverse position by fluid pressure from said manual selector valve means and for directing the variable clutch engagement control pressure to said first clutch means when the forward position is established and to said second clutch means when said reverse position is established for permitting selective engagement and disengagement of said clutch means by the operator when manual selector valve means is being moved between forward drive positions or to the reverse drive position.

3,858,461

SHAVER INNER CUTTER

Robert J. Tolmie, Fairfield, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.

Filed Nov. 8, 1973, Ser. No. 414,175
Int. Cl. B21k *11/00, 21/00*
U.S. Cl. 76—104 R **10 Claims**



1. A method of forming blade sections in an elongated thin strip of metallic material having longitudinally extending side edges, for forming a landless inner cutter to be used in an electric shaver, the steps comprising:

a. removing material from the strip to provide the strip with a first transversely extending archlike edge in the plane of the strip and between the side edges thereof, the first archlike edge being a reference edge having a rise extending longitudinally of the strip and having a span extending transversely of the strip;

b. cutting the strip at a place thereon which is longitudinally displaced from the first archlike edge so as to form a second archlike edge in the plane of the strip, the second archlike edge having a span which intersects the rise of the first archlike edge, the first and second archlike edges forming an arch-shaped blade section in the plane of the strip;

c. bending the blade section along the span of the archlike edge so as to move the blade section out of the plane of the strip and substantially normal thereto, thereby exposing another archlike reference edge formed by said archlike cut in the plane of the strip, said first and second archlike edges respectively including the inner and outer peripheral edges of the normally disposed blade section, and said another archlike edge being a new first archlike reference edge in the plane of the strip; and

d. repeating the cutting and bending steps so as to form a plurality of blade sections disposed normal to the plane of the strip.

3,858,462

APPARATUS FOR COVERING BUTTONS

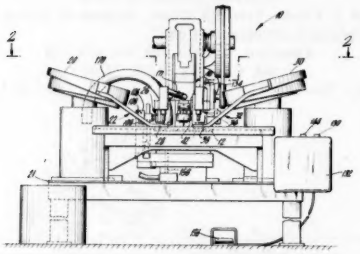
John B. Orlando, Hartsdale, and Anthony M. Ruggiero, Brooklyn, both of N.Y., assignors to Defiance Butter Machine Company, Long Island City, N.Y.

Filed Sept. 20, 1973, Ser. No. 399,332
Int. Cl. A44b *1/06*
U.S. Cl. 79—5 **8 Claims**

1. Apparatus for assembling buttons having a back, a shell

and a covering material over the shell, said apparatus comprising:

a reciprocable ram carrying an upper die; a rotatably indexed table having in alternate juxtaposition shell-receiving and back-receiving lower die members; means to deliver shells and backs to their respective lower dies; said reciprocable ram having upper and lower portions adjustably connected together by linking means and having resilient, deformable buffer means interposed between said upper and lower portions to permit limited relative movement of the upper and lower portions to



allow accomodation of a range of covering material thicknesses;

said upper die comprising a central shank member affixed to said ram lower portion and an upper die sleeve member surrounding, and reciprocable with respect to, said shank member;

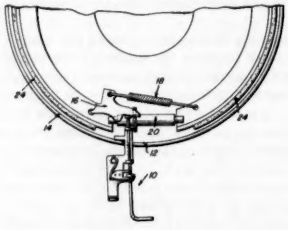
and means for selectably limiting the relative reciprocation of said upper die sleeve member with respect to said shank member when the rotatable table is indexed to align a shell-receiving lower die member with the upper die member.

3,858,463

REAR WHEEL BRAKE ADJUSTMENT TOOL

Frank J. Klavonich, Jeannette, Pa., assignor to Rose M. Klavonick, Jeannette, Pa.

Filed May 30, 1973, Ser. No. 365,143
Int. Cl. B25b *27/00*; **F16d** *71/02*
U.S. Cl. 81—3 R **5 Claims**



1. A tool for relieving the pressure of a lock bar on a brake adjustment spindle, comprising, in combination:

a. means for moving a brake spindle lock bar to a position releasing a brake adjustment spindle associated with the lock bar; and

b. means for holding the means for moving in a position retaining the lock bar in a spindle releasing position;

c. the means for moving includes a longitudinal member having spaced ends, a manipulating portion provided at one end and an abutment at the other end, the means for holding including:

i. a frame provided with a handle portion arranged for positioning the frame, and with a guide;

ii. a plurality of notches provided in the longitudinal member and arranged between the manipulating portion and the abutment, the longitudinal member slidably arranged in the guide; and

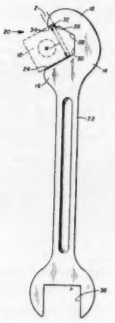
iii. means for interrelating with at least one of the notches and locking the longitudinal member against sliding movement in the guide, the notches being arranged along only one longitudinal side of the longitudinal member and the longitudinal member being disrelated from the means for interrelating by rotation of the longitudinal member about the longitudinal extent of same, and the means for interrelating including a pawl slidably mounted on the frame and arranged for sliding movement toward and away from the longitudinal member, and spring means mounted on the frame for biasing the pawl toward the longitudinal member and forming a spring pawl arrangement.

3,858,464

COMBINATION HEXAGONAL AND SQUARE MEMBER WRENCH

James P. Evans, 3233 S.W. 23 St., Oklahoma City, Okla.

Filed Apr. 16, 1973, Ser. No. 351,250
Int. Cl. B25b *13/02, 13/16*
U.S. Cl. 81—119 **7 Claims**



1. A combination ratcheting wrench for a hexagonal member in which the distance between opposing sides is A and the width along one side is B, and for a square member in which the distance between opposing sides is C, and wherein C is greater than A, comprising:

a body providing a backup jaw and a torqueing jaw with a member receiving space therebetween and a handle portion extending therefrom, said backup jaw having a planar member engaging working surface, said torqueing jaw having:

1. a first hexagonal member working surface parallel to and spaced from said backup jaw member engaging surface a distance slightly greater than A;

2. a second hexagonal member working surface intersecting said first hexagonal member working surface; the length of said first hexagonal member working surface being less than ½B and the length of said second hexagonal member working surface being at least equal to B, the plane of said second hexagonal member working surface intersecting the plane of said backup jaw member engaging surface at an angle of 60°, said second hexagonal member working surface and backup jaw simultaneously engaging a pair of

alternate sides of the hexagonal member along the entire length of said alternate sides;

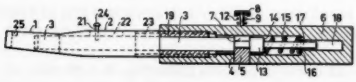
3. a square member positioning surface intersecting said first hexagonal member working surface at the end thereof opposite said second hexagonal member working surface, the plane of said square member positioning surface being perpendicular to said backup jaw member engaging surface; and

4. a square member working surface intersecting said square member positioning surface perpendicular thereto, the square member working surface being parallel said backup jaw member engaging surface and spaced from said backup jaw member engaging surface slightly greater than C, the length of said square member working surface being less the ½ C.

3,858,465
WRENCH

Erik Lind, Ivars Uddevagen 1, 590 80 Sondra Vi, Sweden

Filed May 9, 1973, Ser. No. 358,471
Claims priority, application Sweden, May 9, 1972, 6166/72
Int. Cl. B25b *13/12*
U.S. Cl. 81—129 **7 Claims**

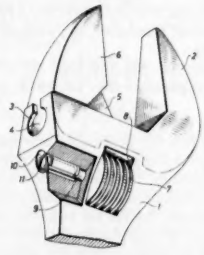


1. Adjustable wrench comprising a wrench head (1), an opening in said wrench head, a tubular shaft (2) which is non-pivotable with respect to said wrench head and extends therefrom and is located substantially in the same plane as said wrench head, a rod (3), which is axially displaceable in said shaft and has one of its ends projecting into said opening in the wrench head (1), and a sleeve (6), which is axially displaceable and lockable in different axial positions on that end of the tubular shaft (2) which is remote from the wrench head (1), characterized by the provision of means for releasable locking of the rod (3) to the sleeve (6) in axial direction and for resiliently pressing the rod (3) in the direction towards the wrench head (1) when the locking is released.

3,858,466
ADJUSTABLE SPANNERS

Bengt Bruno Brunosson, Enkoping, Sweden, assignor to AB Bahco Verktyg, Enkoping, Sweden

Filed Feb. 11, 1974, Ser. No. 441,168
Claims priority, application Sweden, Mar. 2, 1973, 73029860
Int. Cl. B25b *13/16, 23/00*
U.S. Cl. 81—170 **4 Claims**

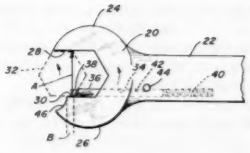


1. An improvement in adjustable spanners of the type comprising a handle having a fixed jaw, an adjustable jaw mounted on a traveler, an adjuster screw for adjusting the traveler so that the desired width can be obtained between the jaws, a pin arranged to rotatably support the adjuster screw, said adjuster screw being located in an opening in the handle or the traveler and being arranged to co-act with a toothed rack on said traveler or said handle, the pin being mounted in a bore arranged in said handle or said traveler, wherein a leaf spring in the form of a substantially cylindrical shell presenting an inwardly folded long edge portion extending along one long edge of a longitudinal extending slot in said shell, said leaf spring being placed externally on the outer end of the pin in the bore and being completely accommodated in said bore with the outside of said shell lying in spring contact with the wall of the bore and with at least the inwardly folded end portion blocking axial outward movement of the pin in said bore.

3,858,467
WRENCH HAVING INTERCEPTOR FOR SELECTABLY RATCHETING OR TORQUEING A HEXAGONAL MEMBER

James P. Evans, Oklahoma City, Okla., assignor to Nicholas M. Rylander, Tulsa, Okla.

Filed Apr. 1, 1974, Ser. No. 456,648
Int. Cl. B25b *23/08*
U.S. Cl. 81—179 **9 Claims**



1. A wrench having both torqueing and ratcheting capabilities for rotating a hexagonal member, such as a nut, or bolt, wherein the hexagonal member has a distance between opposing sides of X, and a length along one side of Y, comprising:

a body portion having a torqueing jaw and a backup jaw extending therefrom in a common place, the jaws being spaced apart from each other slightly greater than X and providing a member receiving space therebetween, the jaws each having a working surface, the working surfaces being parallel to each other and spaced to slidably receive the opposed parallel sides of the member to be rotated, the length of the torqueing jaw working surface equal to Y and the length of the backup jaw working surface being greater than Y, the body having a handle portion, extending therefrom:

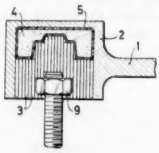
a retractable interceptor means carried by said body portion and positionable between a torqueing position and a ratcheting position, the interceptor having a member engaging surface so arranged that in the ratcheting position the interceptor engages the member to be rotated and limits the contact of said torqueing jaw working surface to less than one half of a member parallel side, and when the interceptor means is in the torqueing position the torqueing jaw working surface is unobstructed to fully engage the member parallel side; and

means of selectably retaining the interceptor in the ratcheting position.

3,858,468
CLAMPING TOOL

Max Pasbrig, Orselina, Ticino, Switzerland, assignor to Lacrex Brevetti S.A., Minusio, Switzerland

Filed Feb. 2, 1973, Ser. No. 328,918
Claims priority, application Germany, Feb. 18, 1972, 2207778
Int. Cl. B25b *13/12, 1/24*
U.S. Cl. 81—185 16 Claims

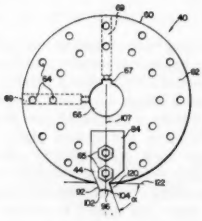


1. A clamping tool for form-locking holding of components of varying shapes and sizes, comprising a housing forming a chamber open outwardly at one end, a bundle of slidable rods in the chamber lying against each other and against the inner surface of the chamber, each of said rods having an inner end portion within said chamber in displaceable contact with a resilient cushion, a resilient cushion in the housing urging the rods outwardly of the chamber, said resilient cushion comprising an elastic casing enclosing a compressible medium, and means engaging the rods for retaining the rods in the chamber.

3,858,469
METHOD FOR CUTTING HOLES IN ROOFING SHEET MATERIAL

Edwin Ernst Hibbing, Castle Rock, Colo., and Frank Preisler, South Bound Brook, N.J., assignors to Johns-Manville Corporation, Greenwood Village, Colo.

Division of Ser. No. 287,117, Sept. 7, 1972, Pat. No. 3,813,977. This application Mar. 14, 1974, Ser. No. 451,663
Int. Cl. B23d *25/12*; B26d *1/56*
U.S. Cl. 83—37 2 Claims



1. A method of cutting holes in roofing sheet material comprising the steps of:

a. continuously feeding a web of sheet material in a given longitudinal direction;

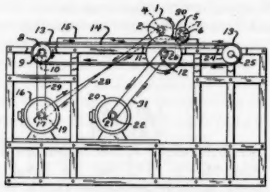
b. penetrating the moving sheet material along a pair of longitudinally-spaced, laterally-extending lines at substantially the same time by means of an edged instrument which is rotated about a predetermined axis; and subsequently

c. shearing the moving sheet material with said edged instrument along a pair of laterally-spaced, longitudinally-extending lines, each of said longitudinally-extending lines connecting a pair of laterally aligned ends of the laterally-extending lines.

3,858,470
FRENCH AND ITALIAN BREAD SLICER

Frank J. Solome, 1921 Whittier, Schaumburg, Ill. 60172

Filed Feb. 19, 1974, Ser. No. 443,698
Int. Cl. B26d *7/06*
U.S. Cl. 83—149 15 Claims



1. A bread slicer, for slicing an elongated loaf of bread into a plurality of substantially uniform pieces, which slicer comprises, in cooperative combination:

a. bread-conveying means consisting of a plurality of elongated individual conveyor belts in side by side relation, each of which is separated a finite distance from adjacent belts;

b. a plurality of vertical circular saw blades, alternately disposed between said belts, the upper horizontal tangent of said blades being above said belts a distance greater than the thickness of said loaf;

c. a plurality of compressible primary rollers, alternately disposed between said saw blades and superimposed over said belts, the lower horizontal tangent of said primary rollers being below the upper horizontal tangent of said saw blades to the extent that said loaf is forced downwardly thereby to maintain contact with said conveyor belts; and,

d. a plurality of compressible secondary rollers, superimposed over said belts in substantial alignment with said primary rollers and, with respect to the direction of movement of said belts, being disposed behind said primary rollers;

said bread slicer being further characterized in that said conveyor belts are supported by a horizontal plate, extending substantially the entire length of said belts, of a width greater than said conveying means.

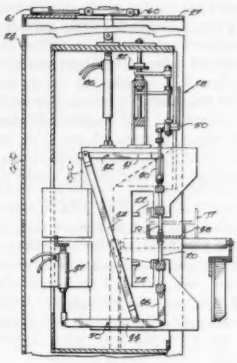
3,858,471
FLANGE PUNCH POSITIONING APPARATUS

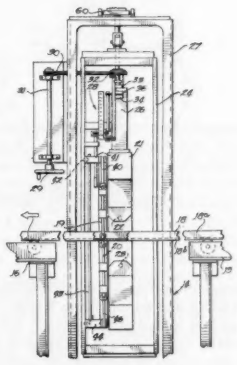
Raymond L. Valente, Kankakee, Ill., assignor to Manco Mfg. Co., Bradley, Ill.

Division of Ser. No. 302,345, Oct. 30, 1972, Pat. No. 3,817,135. This application Dec. 18, 1973, Ser. No. 426,098
Int. Cl. B26f *1/02*
U.S. Cl. 83—368 2 Claims

1. In an apparatus for processing a workpiece such as a structural member having a horizontal portion and an upstanding flange portion, the combination comprising means for supporting workpiece processing tool means adjacent said flange of a workpiece, means for adjusting said tool support means transversely of said flange for selectively positioning the tool means in accordance with the location of a side surface of a horizontal portion and in accordance with a plane substantially bisecting said horizontal portion, and opposed sensing elements movably secured to said adjusting means and engageable with the opposite sides of said horizontal portion

for sensing said plane bisecting the horizontal portion, whereby said tool support means is moved transversely of said flange for positioning the tool at a predetermined location as measured from said plane.





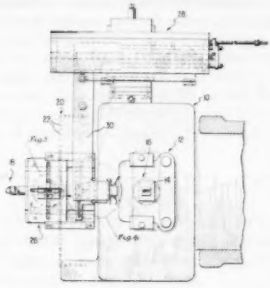
3,858,472
SAFETY SYSTEM FOR MACHINES
Michael P. Allette, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.
Filed July 26, 1973, Ser. No. 382,655
Int. Cl. B26d *5/00, 7/06*
U.S. Cl. 83—397 **17 Claims**

1. In combination with a machine having a ram and an anvil defining a work station and means for causing relative movement between said ram and anvil from a separated condition to a closed condition and back to separated condition to perform a working operation, and said machine presenting an operator's station spaced from said work station;

guard means separating said work station from said operator's station for blocking operator encroachment upon said work station and including an opening therein communicating said operator's station with said work station;

workpiece receiving means mounted for movement back and forth from one side to the other of said guard means;

shuttling means for shuttling said workpiece receiving means back and forth through said opening to transfer a workpiece loaded on said shuttling means by an operator to the work station side of said guard means, said shuttling means being always disposed at least partially within said opening whereby effectively to block same; and



workpiece transfer means for transferring a workpiece from said workpiece receiving means to said work station when said workpiece receiving means is on the work station side of said guard means.

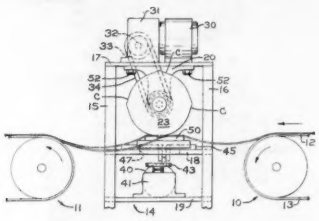
3,858,473
FABRIC CONTROL MECHANISM FOR TEXTILE CUTTING DEVICE
Bruno Bystron, Ingolstadt, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany
Filed July 16, 1973, Ser. No. 379,479
Claims priority, application Germany, July 20, 1972, 2235556
Int. Cl. D06h *7/24*
U.S. Cl. 83—401 **5 Claims**

1. Fabric carrier mechanism for a textile cutting machine having a cutting tool comprising a reciprocable fabric carrier having a flat area adjacent to the cutting tool, drive means, coupling means for coupling said fabric carrier and said drive means for reciprocably driving said fabric carrier and including first teeth means engageable with said drive means and second teeth means engageable with a portion of said fabric carrier adjacent to said flat area, the drive means including a toothed wheel complementally engageable with the first teeth means, and a plurality of spaced toothed guide rollers engageable with the first teeth means.

3,858,474
FABRIC CUTTING
Mathew Kuts, Akron, Ohio, assignor to B. F. Goodrich Company, New York, N.Y.
Filed Feb. 20, 1974, Ser. No. 444,038
Int. Cl. B26d *7/06;* **B23d** *19/02*
U.S. Cl. 83—424 **7 Claims**

1. An apparatus for cutting rubberized fabric into at least two long separate continuous lengths comprising a support frame, input conveying means, a discharge conveying means cooperative with said input conveying means to convey fabric

to and from said support frame, guide means mounted on said support frame, a carriage mounted on said support frame for reciprocable movement on said guide means, said carriage cooperative with said input conveyor to support fabric conveyed therefrom, power operated means mounted on said support frame and connected to said carriage for reciprocating said carriage on said guide means, anvil means secured to said carriage for movement therewith, a cutter support member mounted on said support frame, cutter means journaled on said cutter support member for rotation thereon, drive means



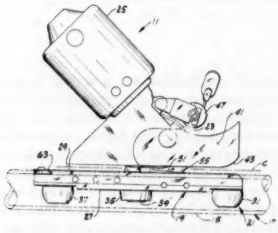
mounted on said cutter support member operatively connected to said cutter means for rotating said cutter means, said anvil means having a linear cutting edge, said cutter means having a plurality of circumferentially spaced cutting edges that are cooperative with saio anvil means to perform a shearing action on fabric therebetween and operative to provide a continuous cut on fabric moving between said conveying means, and biasing means connected to said cutter means to bias said cutting edges of said cutter means into shearing contact with said linear cutting edge of said anvil as said cutting edges approach said linear cutting edge of said anvil.

3,858,475

CLOTH CUTTING APPARATUS FOR CLOTH REWINDING MACHINE

Walter A. Thater, Kirkwood, Mo., assignor to The Measuregraph Company, St. Louis, Mo.

Filed July 19, 1973, Ser. No. 380,863
Int. Cl. B26d *1/18*
U.S. Cl. 83—471.2 **9 Claims**



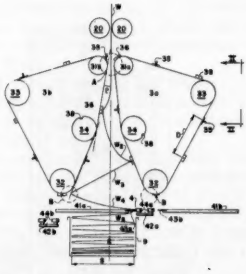
1. cloth cutting apparatus adapted for use on a cloth rewinding machine, said machine having a frame, means for supporting a bulk roll of cloth, and means for winding cloth from the roll into a bolt; said cutter apparatus comprising a track adapted to be secured to said rewinding machine extending generally parallel to the longitudinal axis of said bolt and being positioned so that the cloth passes by the track prior to being wound up in said bolt, said track comprising a length of tubing having a slot extending longitudinally thereof with said slot facing said cloth, a carriage having roller means adapted to be received in the tube so as to mount the carriage for movement along the track, a rotary cutting blade, drive means for driving the cutter blade, said carriage being movable along the track with said cutter blade driven by said cutter drive means to cut the cloth, said carriage comprising a body portion adapted to be disposed within said tube and a bracket portion extending outwardly of tht tube through said slot for supporting said cutter blade and said cutter drive means, and a plurality of rollers journalled on said body portion of said carriage for rolling on the inside surface of said tube as said carriage is moved along the tube, said plurality of rollers including a first roller in rolling contact with the inner surface of the tube on one side thereof, a second roller in rolling contact with the inner surface of the tube on the opposite side thereof from said one side, and a third roller in rolling contact with the inside surface of the tube on said one side, whereby with said first and third rollers and said second roller in rolling contact with generally opposite sides of the tube, said carriage is effectively prevented from rocking side-to-side relative to the tube as the carriage is moved longitudinally along the track.

3,858,476

ACCORDION, FOLDING AND CUTTING APPARATUS

John DeLigt, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 176,487, Aug. 31, 1971, Pat. No. 3,784,188. This application July 12, 1973, Ser. No. 378,601
Int. Cl. B26d *1/02*; **B23d** *35/00*
U.S. Cl. 83—512 **5 Claims**



1. An apparatus for cutting a web material having a substantially constant width and an indefinite length, said web material being accordion folded at transversely extending creases having sequentially opposite bight openings to divide said web longitudinally into panels of substantially uniform length, said apparatus comprising:

first and second movable cutting edges secured to respective means for alternately translating said cutting edges in substantially the same plane on opposite sides of said web between a web disengagement position to a crease bight engagement position;

first and second roller carriages secured to respective means for alternately translating said carriages from a web disengagement position to a crease bight engagement position; said first cutting edge and said first roller carriage simultaneously engaging said web on oposite sides thereof, said first cutting edge passing between a first adjacent pair of panels to engage said web in the bight opening therebetween;

said second cutting edge and said second roller carriage simultaneously engaging said web on opposite sides thereof, said second cutting edge passing between a second adjacent pair of panels to engage said web in the bight opening therebetween;

each of said roller carriages comprising a plurality of flat tread rollers having axes thereof secured to endless belt means;

driving means for driving said endless belt means about a closed periphery lying in a plane substantially parallel to said respective cutting edges to cut said web when the

tread of said rollers compresses said web against a respective cutting edge; and

sequence control means to coordinate the alternate engagement of said first cutting edge and roller carriage with crease bights opening to a first direction and the engagement of said second cutting edge and roller carriage with crease bights opening to a second direction, said control means permitting a first time interim for web engagement between a cutting edge and respective roller carriage sufficient to sever said web and a second time interim sufficient to permit the passage of a predetermined number of adjacent panels between said first and second adjacent pair of panels.

3,858,477

PERCUSSION MUSICAL INSTRUMENT HAVING RESONATORS OF RECTANGULAR CROSS-SECTION

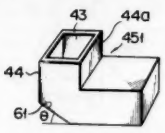
Genichi Kawakami, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizouka-ken, Japan

Continuation of Ser. No. 240,464, April 3, 1972, abandoned. This application Aug. 23, 1973, Ser. No. 390,686

Claims priority, application Japan, Apr. 8, 1971, 46-26374[U]; Apr. 8, 1971, 46-26375[U]; Aug. 12, 1971, 46-60647

Int. Cl. G10d *13/08*

U.S. Cl. 84—410 **1 Claim**



1. In a percussion musical instrument comprising tone bars having resonators under the tone bars, the improvement which comprises a resonator having a first portion of rectangular cross-section having an open mouth of rectangular shape and a tone chamber of rectangular shape depending from said open mouth, a second portion of rectangular cross-section extending perpendicularly to said first portion and having a tone chamber of rectangular cross-section communicating with the tone-chamber of said first portion and a reflection plane positioned at the base of said first portion in the junction between said first portion and said second portion, said plane being inclined at an angle between about **30°** and **50°** to the longitudinal axis of said second portion.

3,858,478

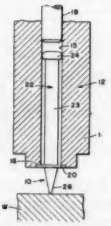
CONCRETE FASTENER

John J. Boudreau, Jr., deceased, 82 Breed St., late of East Boston, Mass. (by Phyllis V. Boudreau, administratrix)

Filed Aug. 24, 1972, Ser. No. 283,374

Int. Cl. F16b *15/02*

U.S. Cl. 85—10 E **3 Claims**



1. A fastener for piercing a hard material by the use of an impacting member comprising;

an elongated nail having a shank portion of constant diameter with a taper at one end and a head at the other end, and a flat washer disposed about the nail at the one end thereof,

said washer having means defining a plurality of inwardly extending wings defining scoring means for preventing rotation of said nail,

said head being rounded about its circumference and having a diameter of smaller dimension than the transverse extent of said washer,

said head defining an outer diameter along a plane perpendicular to said shank and defining a first rounded edge of first radius and a second rounded edge of second radius in a second plane perpendicular to said first plane, said second radius being different than said first radius and the edges of said first and second radii meeting at said first plane.

3,858,479

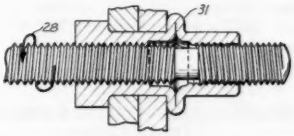
BLIND FASTENER SET BY ROTARY STUD HAVING THREADS OF OPPOSITE HAND

Jagdish S. Sekhon, Fountain Valley, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Filed Sept. 14, 1973, Ser. No. 397,323

Int. Cl. F16b *13/06*

U.S. Cl. 85—70 **5 Claims**



1. A blind fastener assembly comprising:

a stud having a first section of threads of one hand and a second section of threads of the other hand; and

a hollow tubular sleeve having a head and a first length of internal threads of said one hand threaded to said threads of one hand of said stud, and a second length of internal threads of said other hand threaded to said threads of said other hand of said stud;

whereby when the sleeve is passed through bodies to be fastened with the head at the front side of said bodies, and the stud is then torqued relative to the sleeve in the direction which draws the first and second lengths of sleeve threads toward each other, a part of the sleeve to the rear of the bodies is buckled and bears against the rear of the bodies, thereby setting the fastener.

3,858,480

STRINGED INSTRUMENT

William A. Schneider, and Stanley C. Hirsch, both of Palm Springs, Calif., assignors to Stanley C. Hirsch, Palm Springs, Calif.

Filed Oct. 26, 1973, Ser. No. 410,194

Int. Cl. G10d *3/00*

U.S. Cl. 84—1.16 **9 Claims**

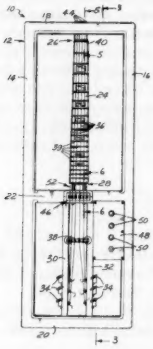
1. A stringed instrument comprising in combination:

an elongated, relatively rigid frame designed to withstand a compression stress applied to the ends thereof at least equal to the tension load of the strings;

a fretted neck extending generally parallel to said frame and attached at opposite ends to the frame, said neck being flexibly connected at one end to said frame, whereby bending stresses are prevented from being transmitted to the neck from the frame;

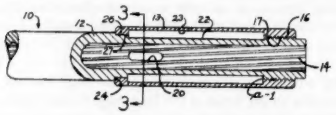
a plurality of strings attached to opposite ends of said frame and extending lengthwise of said fretted neck just above the top surface thereof;

a bridge on said frame over which said strings are carried;
means for adjusting the tension in each of said strings so as to tune them; and
means for amplifying the musical tones produced by said strings;



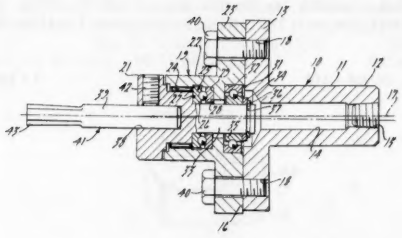
said frame taking the entire tension load of said strings, leaving said fretted neck entirely free of compression stresses.

3,858,481
FOR: COMPENSATOR SYSTEM FOR SPORTING AND TARGET RIFLES
Otho Harkness Elliott, 116 E. La Salle, Royal Oak, Mich.
Filed Mar. 19, 1973, Ser. No. 342,509
Int. Cl. F41c *21/18;* **F41f** *17/12*
U.S. Cl. 89—14 C **1 Claim**



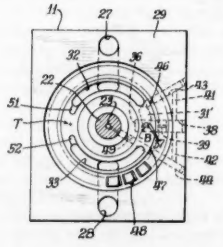
1. In combination with a rifle having a relatively long barrel with a cartridge chamber at one end and a muzzle at the other end with a rifled bore of constant diameter therebetween, a compensator system for minimizing gas blow-by, muzzle jump, and recoil comprising a cylindrical member extending coaxially with and radially outwardly spaced from said barrel at the muzzle end thereof, a threaded section on the exterior of said barrel, a complimentary internal thread on said cylindrical member for seating and sealing one end of said member to the exterior of said barrel, a circumferential shoulder on said barrel spaced from the threaded section thereon, the other end of said cylindrical member being seated in sealing relation on said shoulder, said cylindrical member in combination with said barrel defining an annular gas expansion chamber, a plurality of gas ports extending radially through said barrel providing a fluid communication path between the bore of said barrel and the interior of said gas expansion chamber, a pair of gas discharge vents at the muzzle end of said cylindrical member extending radially and angularly oppositely upwardly therethrough so as to provide a fluid communication path between the interior of said gas expansion chamber and the atmosphere, said gas ports having a total area at least twice the cross sectional area of the bore of said rifle and being spaced rearwardly from the muzzle of said rifle a distance approximately 2 ½ inches and substantially less than the spacing between said cartridge chamber and said ports whereby high pressure gases generated upon firing of a cartridge propell a projectile through a relatively long path within said barrel prior to being vented radially outwardly through said gas ports into said gas expansion chamber, said gases moving forwardly through said expansion chamber, thence radially outwardly through said gas discharge vents while the projectile propelled by said gases is still in sealing engagement with the bore of said barrel thereby exerting an axial and radial force on said barrel in opposition to recoil and muzzle jump, respectively, and minimizing blow-by upon exit of the projectile from the muzzle of the rifle.

3,858,482
CUTTING DEVICE FOR FORMING POLYGONAL SHAPED OPENINGS
John R. Scaduto, 14460 E. State Fair, Detroit, Mich. 48205
Filed Dec. 5, 1973, Ser. No. 421,997
Int. Cl. B23d *13/00*
U.S. Cl. 90—24 R **7 Claims**



1. In a cutting device for forming a polygonal shaped opening in a work piece comprising; an adaptor having a supporting shank and a flange at one end, a holder having a flange supported on said adaptor flange, a spindle rotatably supported in said holder and provided with a central aperture, an elongated cutting tool having an end face of polygonal cross section, and means for securing said cutting tool in said aperture for rotation by the work piece which is driven in rotation the axis of said cutting tool being disposed at an angle to the axis of the supporting shank.

3,858,483
PRESSURE RELIEF EXPANSION CHAMBER FOR HYDROSTATIC MOTORS
Allyn J. Hein, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 18, 1973, Ser. No. 352,359
Int. Cl. F01b *13/04*
U.S. Cl. 91—6.5 **7 Claims**



1. In a cylinder head of a type suitable for mounting relative to a rotatable cylinder barrel of a hydraulic motor, the cylinder barrel having a plurality of bores reciprocably mounting

respective pistons, the cylinder head having inlet and outlet ports circumferentially arranged in a valve face of the cylinder head for periodic communication with the piston bores, reciprocation of the pistons being timed in accordance with relative rotation between the cylinder head and cylinder barrel, the improvement comprising a portion of the cylinder head forming an expansion chamber, the cylinder head also forming a restrictive orifice for communicating the expansion chamber with the valve face of the cylinder head at a point intermediate the inlet and outlet ports, the point being selected for communication with each cylinder bore just prior to its respective piston reaching a limit of reciprocation within the bore, the restrictive orifice being selectively sized to control the rate of pressure equalization between the respective cylinder bore and the expansion chamber, and further comprising means for communicating fluid from the expansion chamber to bearing means arranged between the cylinder head and the cylinder barrel.

3,858,484

HYDRAULIC, ROTARY SERVO-ACTUATOR

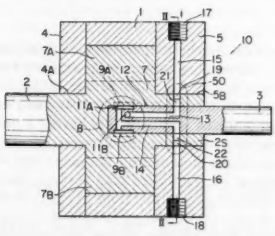
Youichi Saida, Kawasaki; Hajime Ito, Yokohama; Kojiro Imanaga, Tokyo, and Tomoji Jyumonji, Yokohama, all of Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Oct. 18, 1973, Ser. No. 407,629

Claims priority, application Japan, Oct. 21, 1972, 47-104862

Int. Cl. F15b *9/10*

U.S. Cl. 91—375 **2 Claims**



1. A hydraulic, rotary servo-actuator comprising:

a closed cylindrical enclosure having therewithin a plurality of hydraulic action chambers;

an input shaft entering said enclosure one end thereof and rotatably and coaxially supported therewithin;

an actuated member comprising a part having a central axial bore, into which said input shaft is rotatably fitted, a rotor part provided with hydraulically actuated parts movably disposed within said chambers, and an output shaft connected unitarily to said rotor part;

a first control valve provided in said input shaft and central axial bore and operating to communicate the chambers selectively with hydraulic fluid supply and discharge passageways formed within the input shaft;

other hydraulic fluid supply and discharge passageways formed within a wall of the enclosure and respectively communicating with a hydraulic fluid supply source and a hydraulic fluid reservoir both outside of the servo-actuator; and

a second control valve provided within the input shaft and central axial bore and operating interrelatedly with said first control valve to communicate and shut off selectively said other supply and discharge passageways respectively with and from the aforesaid passageways formed within the input shaft thereby to prevent excessive actuated movement of said hydraulically actuated parts.

3,858,485

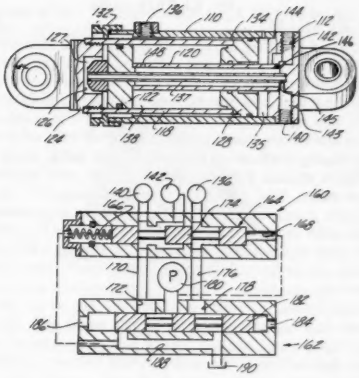
FLUID CYLINDER

Borje O. Rosaen, 4031 Thornoaks, Ann Arbor, Mich., and Robert L. Firth, 4817 Sunnyslope Rd., Minneapolis, Minn.

Continuation-in-part of Ser. No. 110,062, Jan. 27, 1971, abandoned, which is a division of Ser. No. 797,420, Feb. 7, 1969, Pat. No. 3,592,108, which is a continuation-in-part of Ser. No. 660,454, Aug. 14, 1967. This application Nov. 16, 1973, Ser. No. 416,595

Int. Cl. F15b *15/17, 13/042*

U.S. Cl. 91—436 **3 Claims**



1. A fluid cylinder comprising a first, inner tubular member; a piston mounted within said first tubular member in a manner allowing reciprocal movement of said first tubular member relative to said piston and dividing the interior of said first tubular member into a first chamber and a second chamber; a rod member having a first end fixed to said piston and a second end extending exteriorly of said second chamber; a second, outer tubular member telescopically received over said first tubular member and radially spaced therefrom to define a third chamber, said second tubular member being connected to said second end of said rod, fixing the axial position of said piston relative to said second tubular member so that axial movement of said first and second tubular embers with respect to each other results in said third chamber contracting upon contraction of said second chamber and said third chamber expanding upon expansion of said second chamber, means closing the ends of said first and second tubular members; means for selectively providing fluid to and exhausting fluid from said first, second, and third chambers; a first valve means disposed intermediate said second and third chambers, said first valve means being normally positioned to allow fluid communication between a constant flow pump and both said first and second chambers while isolating said third chamber which is in fluid communication with a reservoir through said valve means during expansion of said first chamber; said first valve means including pressure sensing means operable to open communication between said second and third chambers while isolating said first chamber to reduce the rate of expansion of said first chamber upon sensing a predetermined pump outlet presure; and second valve

means operable to reverse cylinder movement reversing the pressurization of said first valve means to effect an initial communication between said pump and said third chamber between said reservoir and said first and second chambers.

3,858,486

ROTOR MEANS AND FLUID CONTAINING CHAMBERS IN FLUID HANDLING DEVICES WITH WORKING CHAMBERS OF RADIALWARD VARIABLE VOLUME

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation of Ser. No. 830,319, June 4, 1969, abandoned. This application July 15, 1971, Ser. No. 164,059
Int. Cl. F01b *13/06*
U.S. Cl. 91—487 4 Claims

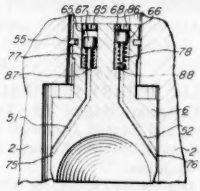
1. Fluid handling device with radially balanced rotor, comprising a housing including a hollow central part having first and second radially extending end faces, said housing further including first and second end members rigidly connected with said central part, abutting against the respective end faces and having bearings defining a main axis, said end members having confronting first and second radial planar housing surfaces spaced a fixed predetermined axial distance from each other, said first end member having inlet and outlet conduit means respectively opening into part-circular inlet and outlet control ports provided in said first housing surface and each extending along an arc of at least 120°, said ports being circumferentially spaced from each other about said main axis and having different fluid pressures; an actuator ring mounted in said central housing part and having an annular inner cam surface eccentric to said main axis; and a rotor mounted in said bearing means for rotation about said main axis and having at the ends thereof first and second radial planar rotor surfaces, said first and second rotor surfaces being spaced from one another by an axial distance which is slightly less than said predetermined distance and respectively forming first and second clearances with said first and second housing surfaces, said rotor having angularly spaced working chambers and including displacement means in said chambers, said displacement means having outer ends slidingly engaging said cam surface during rotation of said rotor and said rotor also having a plurality of passages angularly spaced by the same angle as said working chambers and each communicating with one of said working chambers, each passage having a constant cross section along the full length thereof and respectively having first and second open ends in said first and second rotor surfaces, said first open ends being spaced from said main axis by the same radial distance as said control ports in said first housing surface and communicating with said control ports during rotation of said rotor, said second end member having in said second housing surface part-circular balancing chambers having the same shape and radial distance from said main axis as said control ports in said first housing surface so that pairs which are each composed of a control port and a balancing chamber are successively connected to each other by said passages during rotation of said rotor whereby the same pressure prevails in each balancing chamber as in the control port with which the respective balancing chamber communicates through said passages so that the fluid films in said first and second clearances exert equal pressures on corresponding areas of said first and second rotor surfaces and said rotor is caused to float between said first and second housing surfaces, said rotor further having a plurality of bores extending axially therethrough and having open ends in said first and second rotor surfaces, the open ends of said bores being radially spaced from said control ports and from said balancing chambers and said bores being angularly spaced from said passages in the circumferential direction of said rotor and connecting said first clearance with said second clearance.

3,858,487

RADIAL PISTON TYPE HYDRAULIC PUMP OR MOTOR

Katsuro Abe, Matsudo, and Kozo Ono, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 795,227, Jan. 30, 1969, abandoned. This application May 26, 1972, Ser. No. 257,418
Claims priority, application Japan, Feb. 5, 1968, 43-7436; Feb. 21, 1968, 43-12235; Feb. 21 1968, 43-12236
Int. Cl. F01b *13/06*
U.S. Cl. 91—488 21 Claims



1. A hydraulic machine operable as at least one of a pump and motor; said machine comprising a casing having a waved cam surface, a cylinder block mounted in the casing for relative movement with respect to said casing and having at least one cylinder, each of said cylinders having a piston arranged for reciprocating inward and outward movement therein, engagement means mounted on the inner end of each piston for engagement on the waved cam surface, hydraulic supply means for supplying hydraulic fluid to the cylinder against the outer end of said piston during inward movement of the piston, hydraulic fluid exhaust means for exhausting hydraulic fluid from the cylinder during outward movement of the piston, and pressurized lubricant feed means for feeding pressurized lubricant from a pressurized lubricant source into a space between the cylinder and the piston in a region of the cylinder where said cylinder is subjected to a side thrust force from the piston during at least portions of the reciprocating movement of said piston,

wherein the inside dimensions of each cylinder are slightly greater than the corresponding outside dimensions of the associated piston along at least a portion of the length thereof such that a peripheral gap is formed between said cylinder and piston at each of respective opposite lateral sides of said piston when said piston is centrally positioned in and aligned with said cylinder, said piston and cylinder being configured such that relative lateral movement of said piston with respect to said cylinder resulting from said side thrust forces causes the width of the gap at one side of the piston to be reduced and the width of the gap at the other side of the piston to be enlarged,

and wherein said lubricant feed means includes at least one lubricant supply passage having an outlet end opening into one of said gaps and control means for controlling the supply of lubriccant to said outlet end, said control means being positioned upstream of said outlet end with respect to flow of lubricant through said supply passage and including means for varying said supply of lubricant to said outlet end as a direct function of the changes in lubricant back pressure in said passage resulting from changes in the width of said gap adjacent said outlet end.

3,858,488

VEHICLE BRAKE ACTUATORS

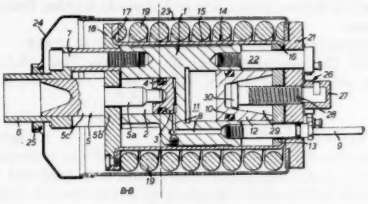
Charles Newstead, and Andrew Charles Walden Wright, both of Birmingham, England, assignors to Girling Limited, Birmingham, England

Filed July 28, 1972, Ser. No. 275,964

Claims priority, application Great Britain, Oct. 14, 1971, 47855/71

Int. Cl. F01b *1/02*

U.S. Cl. 92—61 **6 Claims**



1. An actuator for a vehicle brake comprising an output member moveable between brake applied and released positions, resilient means operatively connected to said output member and biasing it towards its brake applied position, a first fluid operable member working in a working chamber of a first cylinder and operatively connected to said output member parallel with but independently of said resilient means to move said output member to its brake applied position in response to fluid pressure in said first cylinder, a second fluid operable member working in a working chamber of a normally pressurized second cylinder and operatively connected to said resilient means to relieve said output member of the biasing force of said resilient means, and a common, fixed, solid partition wall separating said working chamber of said first and second cylinders and preventing fluid communication therebetween.

3,858,489

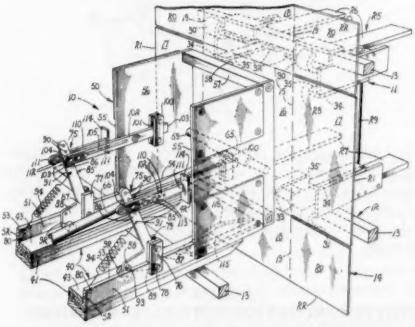
MANIPULATING APPARATUS FOR A CONTAINER FORMING MACHINE

Gerald C. Paxton, Sanger, Calif., assignor to General Nailing Machine Corporation

Filed Sept. 28, 1973, Ser. No. 401,585

Int. Cl. B31b *1/46*

U.S. Cl. 93—51 R **10 Claims**



1. In a container forming machine having means for the delivery of a container blank which has integral side panels and construction flaps to a planar position and including coacting mandrel and die means operable concurrently to thrust the blank along a substantially rectilinear path of travel to fold selected panels and flaps of the blank into facing engagement to form a container in a forming position; a manipulating apparatus comprising a pressure plate; a mechanism borne by the mandrel mounting the plate form movement relative to said mandrel and to and from the forming position; and cooperative cam means mounted on the mechanism and machine and engageable during movement of the plate to and from the forming position to operate the mechanism to urge said plate relative to the mandrel into edgeward engagement with the flaps upon thrusting of the blank to the forming position to position said flaps relative to the side panels.

3,858,490

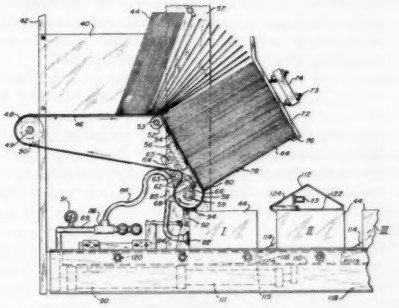
METHOD FOR AUTOMATICALLY FEEDING AND ERECTING FOLDED CARTONS

Raymond A. Heisler, 657 Dakota Trl., Franklin Lakes, N.J. 07407

Division of Ser. No. 336,246, Feb. 27, 1973, Pat. No. 3,814,000. This application Mar. 12, 1974, Ser. No. 450,400

Int. Cl. B31b *1/76*

U.S. Cl. 93—53 M **5 Claims**



1. A method for automatically feeding and erecting folded cartons, said method including the steps of: (a) initially supplying the folded cartons to a vertical supply chute where the lower edges of the cartons are supported on an endless belt; (b) transporting the folded cartons from the initial supply chute by the intermittent advancement of said belt to deliver the cartons to be deposited in a substantially horizontal condition in a horizontal chute, the advancement of the endless belt being in response to the rotative motion of a shaft which carries a plurality of suction cups; (c) engaging the bottom folded carton by the plurality of suction cups carried by and on said rotatable shaft; (d) causing a source of vacuum to be connected to the suction cups to cause the folded carton to be gripped by said cups; (e) pulling the carton from its horizontally stored position to and in way of guide means and by engagement with said guide means pushing the sides of the carton to an erected condition at an erecting station; (f) after bringing the carton to the erected condition causing the vacuum to the cups to be terminated to release the erected carton; (g) moving the erected carton from the erecting station, and (h) with the moving erected carton at a determined distance from the vacuum cups rotating the shaft and said carried cups to bring the cups in way of the next carton to be erected.

3,858,491

ADJUSTABLE GRILLE

Konstantins Dravnieks, Madison, Wis., assignor to Wehr Corporation, Milwaukee, Wis.

Filed Jan. 28, 1974, Ser. No. 437,339

Int. Cl. E06b *7/08*

U.S. Cl. 98—110 **3 Claims**

1. An adjustable grille for an air distribution system comprising

a frame defining an air passage opening and including a pair of opposed frame segments;

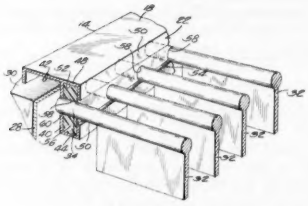
each of said frame segments including an inner flange defining a portion of said opening, an outer flange extending outwardly and generally perpendicularly from siad inner flange, and means defining an elongated channel extending longitudinally substantially along the length of said frame segment, said channel defining means including an elongated slot in said inner flange extending longitudinally substantially along the length of said inner flange and an elongated wall member extending generally perpendicularly from said outer flange in spaced relation to said inner flange,

said wall member including a plurality of longitudinally spaced apertures in alignment with said slot;

an elongated friction member formed from a resilient material disposed in each of said channels and including a plurality of longitudinally spaced apertures coaxially aligned with respective of said wall member apertures, the outer dimension of said friction member apertures being smaller than the outer dimension of said wall member apertures;

a plurality of parallel spaced deflector blades disposed in said opening and extending between said frame segments, each of said deflector blades including pivot pin means extending from the opposite end thereof; and

each of said pivot pin means extending through respective of said slots and respective of said aligned friction member apertures and wall member apertures and having an outer dimension substantially corresponding to the outer dimension of said wall member apertures and larger than the outer dimension of said friction member aperture such that said wall member pivotally supports said pivot



pin means for relative pivotal movement of said deflector blades, and the walls of said friction member apertures tightly engage respective of said pivot pin means to restrain pivotal movement of said deflector blades and thereby retain said deflector blades in a desired angular position.

3. In a method for assembling an adjustable grille including an opposed pair of frame segments and a plurality of deflector blades, each of which extends between said frame segments and include pivot pin means on the opposite ends thereof for pivotally mounting said deflector blades on said frame segments, comprising the steps of:

forming an elongated friction member from a relatively resilient material for each of said frame segments;

forming each of said frame segments with an elongated channel for receiving a friction member, said channel locating said friction member so that said pivot pin means extend therethrough upon assembling said deflector blades with said frame segments and said channel including a wall member adaptable for receiving end portions of the respective pivot pin means;

installing a friction member in each of said channels; and

forming coaxial apertures in said friction members and said wall members for receiving respective said pivot pins means by forcing a hole forming means having an outer dimension slightly larger than the outer dimension of said pivot pin means through both said friction member and said wall member, whereby, upon withdrawal of said hole forming means from said well member and said friction member, the inner dimension of the resulting apertures in said friction members is less than the outer dimension of said pivot pin means because of the resilient character of said friction member.

3,858,492

FLAVOR ENHANCEMENT OF MILK FOODSTUFFS

Noboru Mukai, and Masanobu Kawai, both of Tokyo, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Continuation of Ser. No. 711,854, March 11, 1968, abandoned. This application May 20, 1971, Ser. No. 145,515

Claims priority, application Japan, Mar. 14, 1967, 42-15577

Int. Cl. A23c *9/00, 15/00, 19/00*

U.S. Cl. 426—36 **8 Claims**

1. A process for imparting to milk foodstuffs an enhanced dairy flavor which comprises placing the milk foodstuff in contact with 0.05 to 1 wt% based on weight of the milk foodstuff of an enzyme derived from a microorganism selected from the group consisting of genus Irpex and Fomitopsis until a sufficient dairy flavor is obtained.

3,858,493

FILTER DEVICE FOR PRODUCING FILTERED COFFEE BEVERAGES

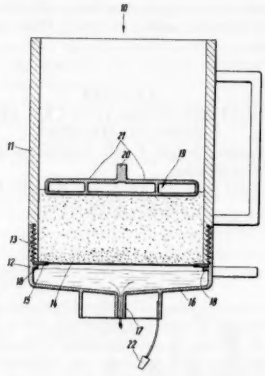
Manfred Hermsen, Langenstrasse 12, 28 Bremen, Germany

Filed Feb. 20, 1973, Ser. No. 333,931

Claims priority, application Germany, Feb. 19, 1972, 2207839

Int. Cl. A47j *31/00;* **B01d** *23/20*

U.S. Cl. 99—306 **7 Claims**



1. A filter device for preparing filtered coffee beverages having a filtering surface for receiving the ground roast coffee onto which water is to be poured and comprising a covering to be inserted in the device above the filtering surface, characterized in that the covering is in the form of a floatable deflecting element.

3,858,494

COFFEE PERCOLATOR WITH SAFETY DEVICE

Wesley G. Martin, Manitowoc, Wis., assignor to Aluminum Specialty Company, Manitowoc, Wis.

Filed Mar. 29, 1973, Ser. No. 345,882

Int. Cl. A23f *1/00*

U.S. Cl. 99—312 **2 Claims**

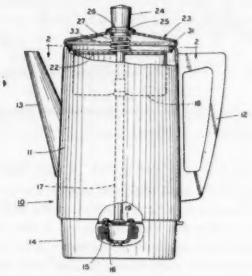
1. A coffee percolator of the type including a vessel having an open top, a tubular stem disposed in said vessel, a coffee

grounds basket supported on said stem, a perforated spreader plate resting on said basket, and a cover positioned over the open top of said vessel comprising

mutually interlocking means on said cover and said vessel for locking said cover to said vessel,

a translucent knob having a tubular portion depending through a central opening in said cover,

a coil spring affixed to the tubular portion of said knob below the inner surface of said cover to maintain said knob assembled to said cover,



said spring depending from the underside of said cover around said stem into engagement with said spreader plate and being compressed against said spreader plate when said cover is locked to said vessel, thereby to lift the cover when the cover and vessel are not interlocked, and a radial protrusion on said tubular portion of said knob extending between adjacent turns of said coil spring to secure said spring to said knob.

3,858,495

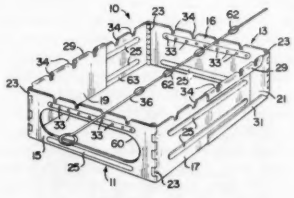
COOKING DEVICE

Warren P. Gotwalt, 2612 Palmeden Dr., Lakeland, Fla. 33802

Continuation-in-part of Ser. No. 169,742, Aug. 6, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 311,498

Int. Cl. A47j *37/04*

U.S. Cl. 99—421 HH **6 Claims**



1. A cooking device of the type designed to support food relative to a heat source, said device comprising: frame means including at least two frame parts movably connected to one another, each frame part comprising a plurality of sides movably connected to one another, said plurality of sides comprising a base side and at least two connecting sides movably attached to said base side, one of said connecting sides of each frame part being of smaller longitudinal dimension than the other said connecting sides on said one frame part, said smaller connecting side of each frame part positioned to movably engage the larger of said connecting sides on the attached frame part; joining means in the form of channel means formed on said connecting side of smaller longitudinal dimension of each frame part, said channel means configured to slidingly engage the correspondingly positioend connecting side of the attached frame part, food supporting means movably mounted on said frame; mounting means including notches correspondingly positioend in each of said plurality of sides of each frame part, wherein said supporting means are adjustably disposed on said frame through a correspondingly positioned notch disposed on oppositely positioned side of connected frames.

3,858,496

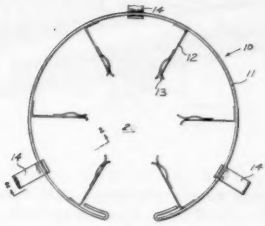
DEVICE FOR SUSPENDING FOOD ARTICLES IN A COOKING MEDIUM

Delores B. Downers, P.O. Box 448, Livingston, Mont. 59047

Filed May 22, 1973, Ser. No. 363,179

Int. Cl. A47j *43/18*

U.S. Cl. 99—448 **3 Claims**



1. A device for suspending food impaled on an elongate member, such as a stick or the like, in a cooking medium, said device comprising an elongate frame member which is bent upon itself in a loop formation; means for supporting said frame member on the rim of a cooking vessel containing said cooking medium, said means comprising a plurality of elongate support members attached to said frame member at spaced intervals therealong and projecting therefrom in a direction generally outwardly from the loop formed by said frame member, with the free ends of said support members being bent into hooks which are adapted to be hooked over the rim of said cooking vessel; and a plurality of brackets attached to said frame member at spaced intervals therealong and projecting laterally therefrom, said brackets having clip members attached at the terminal end thereof, each of said clip members adapted for releasably securing an end portion of said elongate member to said bracket, whereby said elongate member extends downwardly from said bracket and frame member with said food impaled on the downwardly extending portion of said elongate member.

3,858,497

APPARATUS FOR MANUFACTURING WANTANS CONTAINING FILLERS

Masayuki Ishida, Chigasaki, Japan, assignor to Toyo Suisan Kaisha Ltd., Tokyo, Japan

Filed Mar. 27, 1973, Ser. No. 345,254

Int. Cl. A21c *9/06, 11/00, 11/18*

U.S. Cl. 99—450.6 **9 Claims**

1. Apparatus for manufacture of "wantans containing fillers" comprising:

cutting means for dividing a raw layer into a plurality of raw slices;

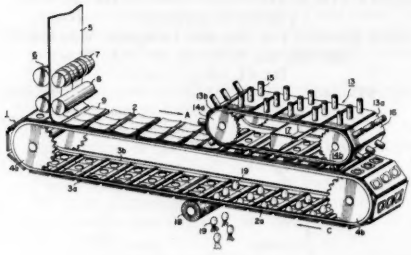
a filling station;

first conveyor means for transferring raw slices from said cutting means through said filling station, said first conveyor means comprising a plurality of juxtaposed supporting plates having openings therethrough over which said raw slices may lay;

second conveyor means disposed over said filling station and comprising a plurality of plates juxtaposed in the moving direction of said conveyor;

at least one cylinder carried by each of said second conveyor means plates by which the center part of a raw slice

may be pushed, during forward movement of said first and second conveyor means, into the corresponding opening in the corresponding supporting plate to form a recess and supply fillers into the recess of the raw slice; shaping means disposed on the underside of each said supporting plate and movable therewith;



each shaping means comprising a frame formed with four pivotally jointed frame members permitting the frame to be moved from its rectangular configuration when under said filling station to a rhomboidal configuration downstream of the filling station so as to close the opening in the recess in a filled raw slice and form a wantan.

3,858,498

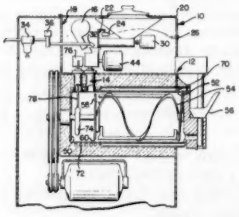
DISPENSING FREEZER

Harvey F. Swenson, Seattle, Wash., assignor to Sweden Freezer Manufacturing Company, West Seattle, Wash.

Filed May 22, 1973, Ser. No. 362,931

Int. Cl. A23c *3/04*

U.S. Cl. 99—470 **8 Claims**



1. Apparatus for making a chilled or partially frozen food product comprising a heated zone having a mixing area, a dry ingredient supply, a liquid ingredient supply, means for dispensing proportionate quantities of dry and liquid ingredients, means for mixing the ingredients in said mixing area in said heated zone, means for heating the heated zone to a temperature at which bacteria growth is inhibited, a cooled zone having a cooling chamber for cooling the mixed ingredients, means for cooling said cooled zone to a temperature at which bacteria growth is inhibited, means for dispensing the product from the cooling chamber, and connecting means between said mixing area and said cooling chamber for transferring the product from the heated mixing area to the cooled chamber said connecting means being of a size such that the product does not contact any part of the surfaces of said connecting means which will support bacteria growth.

3,858,499

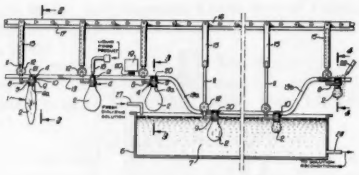
DEHYDRATION AND PACKAGING OF FOODSTUFFS

Robert D. Scott, West Covina, Calif., assignor to Research Development Systems, Inc., Pasadena, Calif.

Division of Ser. No. 127,675, March 24, 1971, Pat. No. 3,758,313. This application Apr. 16, 1973, Ser. No. 351,142

Int. Cl. A23l *1/02*

U.S. Cl. 99—495 **6 Claims**



6. Apparatus for preparing food concentrates in bags which comprises a fill station, a rinse station, and a dialyzing salt bath therebetween, conveyor means having a succession of bag-engaging fingers and adapted to advance a succession of individual food container bags through said bath between the fill station and the rinse station, each of said bags comprising flexible semi-permeable film and a relatively rigid neck ring defining a fill opening by said fingers engaging said bag neck rings to carry the bags in downwardly depending relation to said fill station, means to fill a single portion of water-containing food product to be concentrated into each bag in sequence at said fill station, means to seal each such portion in its bag and means operating the conveyor to pass the filled individual bags through said bath to dehydrate the food product by dialysis.

3,858,500

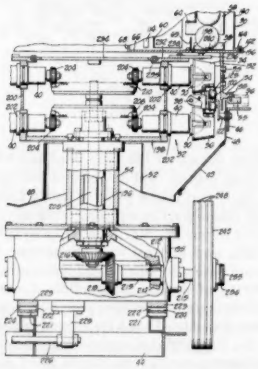
CITRUS JUICE EXTRACTOR

Robert F. Rohm, Fullerton, and L. Bruce Alexander, San Marino, both of Calif., assignors to Brown International Corporation, Covina, Switzerland

Filed July 9, 1973, Ser. No. 377,622

Int. Cl. A23n *1/02*

U.S. Cl. 99—504 **57 Claims**



1. An apparatus for extracting juice from citrus fruit, comprising the combination of:

an annular carousel having a continuous circumferential series of cup means to hold halves of citrus fruit;

a rotary reamer assembly of a diameter substantially smaller than the inside diameter of the annular carousel, said reamer assembly being positioned inside the annular carousel in tangential relation with the inner circumferential region of the annular carousel,

said assembly having a circumferential series of radially positioned reamer elements synchronized with the cup means to cooperate with the cup means to extract juice from the halves of citrus fruit therein; and

means to provide the cup means with halves of citrus fruit for processing by the reamer elements and to remove reamed fruit skins from the cup means after the reaming operation.

3,858,501

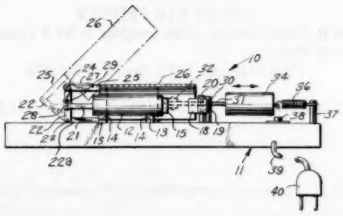
ELECTRIC PECAN CRACKING DEVICE

Henry A. Pfeiffer, 203 E. San Antonio St., Fredericksburg, Tex. 78624

Filed July 9, 1973, Ser. No. 377,821

Int. Cl. A23n *5/02*

U.S. Cl. 99—571 **3 Claims**



1. An electric pecan cracking device, comprising in combination, a base, an upper side of said base forming a flat surface, a pair of brackets a sleeve mounted upon said base in a horizontal position by means of brackets, a piston slideable in said sleeve, one end of said piston having a concave recess for holding one end of a pecan nut, a fastener bolt secured upon said base, a bar pivoted at one end about said fastener bolt, a longitudinal intermediate portion of a side of said bar having a sideward projection, an outer side of said projection having concave recess for holding an oppostie end of said pecan nut, means for moving said projection toward said piston for effecting cracking of said nut an axially extending first arm integral with an opposite end of said piston, a cross pin through an outer end of said first arm, a bar shaped extension affixed to one of said brackets, a lever pivotably attached at one end to said bar shaped extension, a longitudinally intermediate portion of said lever having a longitudinal extending slot engaging said first arm cross pin, a second arm, an opposite end of said lever being pivotally secured on an outer end of said second arm, a shield integral with said second arm, a first spring having one end held against a side of said lever and having an opposite end urging against a side of said second arm thus urging said shield downwardly over said sleeve and concave recesses so to cover said pecan nut there between during a nut cracking operation and prevent scattering nut shell fragments thereof.

3,858,502

SAFETY DEVICE FOR A SKINNING MACHINE

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Aug. 21, 1972, Ser. No. 282,223

Int. Cl. A22c *17/12*

U.S. Cl. 99—589 **15 Claims**

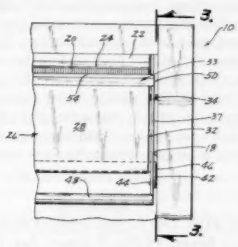
1. A skinning machine comprising:

a frame means having forward and rearward ends;

a skinning blade on said frame means having a horizontally disposed rearwardly presented cutting edge;

a gripping roll adjacent said skinning blade for gripping said product and pulling said product toward said skinning blade;

a feed tray means on said frame means for supporting the product to be skinned while said product is being fed into said skinning blade;



said feed tray means having an inner end positioned adjacent and spaced rearwardly from said cutting edge of said skinning blade,

a shield means between the inner end of said feed tray means and said skinning blade;

means movably mounting said shield means to said frame for movement from a first position wherein said shield is below and rearwardly of said cutting edge upwardly and forwardly to a safety position wherein a portion of said shield is above and in covering relation to said cutting edge.

3,858,503

STRAPPING MACHINE

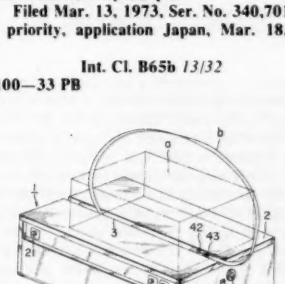
Yukio Takahashi, Tokyo, Japan, assignor to Ikegai Tekko, Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1973, Ser. No. 340,701

Claims priority, application Japan, Mar. 18, 1972, 47-27603

Int. Cl. B65b *13/32*

U.S. Cl. 100—33 PB **1 Claim**



1. In a strapping machine for securing a flexible band in surrounding relationship to an object, such as a package, said machine including a frame having a table slidably supported thereon, the table being adapted to have a package disposed on the upper surface thereof; clip means mounted on said frame for movement between open and closed position, said clip means including a movable clip portion disposed for coaction with the undersurface of said table for holding the leading end of a band therebetween when said clip means is in said closed position; a band feeding device associated with the table and disposed at least partially thereunder for feeding said band upwardly through an opening defined in the upper portion of the frame in a direction substantially perpendicular

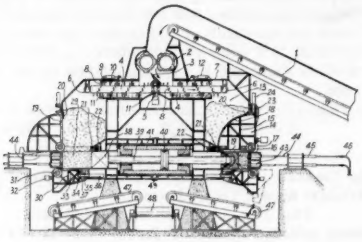
to the direction of movement of the table to form a loop surrounding the table and the package thereon, the band feeding device including means for drawing back the band for tensioning same after the leading end of the band has been clamped by said clip means; a heat sealing device for melting the opposed surfaces of overlapping portions of said loop and for pressing the melted overlapped portions together, said heat sealing device including a pressing member oscillatably mounted on said frame and a heat member mounted on said press member and positioned for engaging said band; and drive means drivingly connected to said table, said clip means and said heat sealing device for causing coordinated movements thereof, said drive means including a motor for controlling the movement of said heat sealing device; comprising the improvement wherein said frame includes a plurality of sidewalls, said heat sealing device being positioned within said frame adjacent one of said sidewalls, and a manually operated control switch mounted on said one sidewall and interconnected to said motor for controlling the energization thereof.

3,858,504

PRESS FOR TREATING HOUSEHOLD REFUSE

Jean-Jacques Boyer, 19 Rue Cognacq Jay, Paris, France

Division of Ser. No. 184,830, Sept. 29, 1971, Pat. No. 3,752,059. This application Mar. 5, 1973, Ser. No. 338,056
Claims priority, application France, Oct. 6, 1970, 70.36035; Sept. 15. 1971, 71.33291
Int. Cl. B30b *9/04*
U.S. Cl. 100—74 **11 Claims**



1. Apparatus for compressing household refuse comprising means for moistening household refuse with water, a pair of axially aligned compression chambers for the refuse, means for feeding the refuse alternately into said compression chambers, means common to both said compression chambers for alternately compressing the refuse in said chambers, perforated tubes for abstracting liquid sludge from the compressed refuse in each of said compression chambers, and means for reciprocably moving said tubes into and out of the chambers in a direction parallel to the common axis of the chambers from the sides of the chambers opposite said compressing means.

3,858,505

APPARATUS FOR PROCESSING FOOD WASTES

Rush E. Lassiter, Hammond, and Floyd S. Saizon, Baton Rouge, both of La., assignors to Floyd Rush Corporation, Baton Rouge, La.

Filed Apr. 6, 1973, Ser. No. 348,636
Int. Cl. B02c *11/08;* **B30b** *15/34, 3/04*
U.S. Cl. 100—93 RP **23 Claims**

1. A machine for processing raw refuse material, said machine comprising:

means for comminuting raw refuse material;

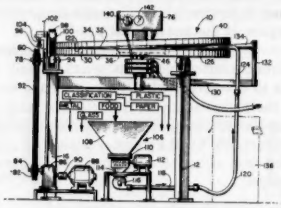
platen support means;

a pair of platens being rotatably carried by said support means and being capable of compressing said comminuted refuse therebetween upon rotation thereof;

means for imparting rotation to said platens;

means for heating said platens;

means for conveying comminuted refuse from said refuse comminuting means and depositing said refuse between



said platens, said comminuted refuse being compressed and dehydrated by said heated platens during a single revolution of said platens; and

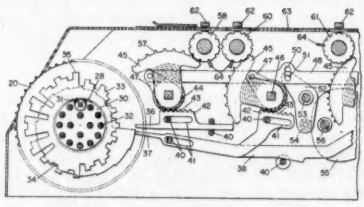
means for removing compressed and dehydrated refuse from between said rotatable platens.

3,858,506

COLOR BAR PRINTER

Marvin D. Frost, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Mar. 30, 1973, Ser. No. 346,430
Int. Cl. B41j *7/08*
U.S. Cl. 101—45 **13 Claims**



1. An apparatus for printing data in the form of coded indicia on a record medium having a plurality of print locations comprising:

a. a plurality of settable indicator wheels positioned in a side-by-side relationship each indicator wheel having displayed on its edge a plurality of groups of character of data, each group of characters comprising the same character and wherein each character is bracketed by coded indicia, each of the indictor wheels being positioned to display the character representing the data to be printed on the record medium with each of the coded indicia that bracket the selected character on each indicator wheel matching the coded indicia on adjacent indicator wheels;

b. a plurality of first settable code converting means operatively associated with each indicator wheel, said code converting means settable to a position commensurate with the position of its associated indicator wheel;

c. a plurality of control surfaces positioned on each of said first code converting means;

d. a plurality of printing elements having printing surfaces thereon for printing coded indicia on a record medium;

e. sensing means positioned adjacent said first code converting means, said sensing means mounted for movement in the same plane as said control surfaces;

f. movable means interconnecting said sensing means and said printing elements to position said printing elements commensurate with the length of movement of said sensing means;

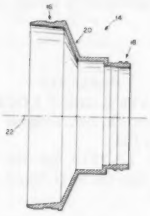
g. and drive means engaging said interconnecting means for moving, when operated, said interconnecting means, said sensing means and said printing elements whereby the printing elements are positioned commensurate with the movement of the sensing means in the sensing of a control surface on said code converting means.

3,858,507

CYLINDRICAL STENCIL WITH PLASTIC END RINGS

Erling Owren, Foster, and William McElroy, Cranston, both of R.I., assignors to Cranston Print Works Company, Webster, Mass.

Filed Apr. 9, 1973, Ser. No. 348,979
Int. Cl. B41n *1/24*
U.S. Cl. 101—127.1 **10 Claims**



1. An end ring for supporting a thin, perforate cylindrical printing member the end ring having printing member supporting and securing structure comprising integral electrically insulating plastic first, second, third, and fourth coaxial cylindrical portions, said first and third portions having a first outer diameter substantially equal to the inner diameter of said perforate member, said second portion having an outer diameter less than said first outer diameter and also having a roughened outer cylindrical surface, and said fourth portion having an outer diameter equal to the outer diameter of said perforate member.

3,858,508

OFFSET PRINTING MACHINE

Tamaki Kaneko, and Katsumi Mizuno, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 71,171, Sept. 10, 1970,. This application Dec. 26, 1972, Ser. No. 318,455
Claims priority, application Japan, Sept. 15, 1969, 44-73074The portion of the term of this patent subsequent to Nov. 14, 1989, has been disclaimed.
Int. Cl. B41f *7/06, 7/26*
U.S. Cl. 101—132 **5 Claims**

1. An offset printing machine having a master cylinder (**1**) with gripping means (**98**) for releasably holding a master plate (**90**) thereon and comprising an actuation member (**4**) movable from a neutral position to a first position (**4A**) to activate a master plate feed unit (**39**) to feed said master plate (**90**) to the master cylinder (**1**), said master plate feed unit (**39**) comprising:

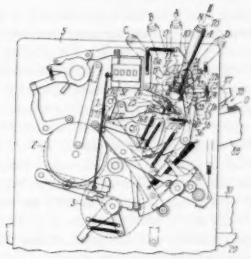
a master plate feed tray (**89**) for supporting a stack of master plates (**90**);

master plate feed means (**87**) operable, when actuated, to feed said master plate (**90**) from the stack of master plates (**90**) on the master plate feed tray (**89**) toward the master cylinder (**1**);

master plate feed command means (**58**) having a neutral position in which it is out of driving connection with the master plate feed means (**87**) and a released position in which it is drivingly connected with the master plate feed means (**87**) to actuate the master plate feed means (**87**) only for a defined segment of the rotation of the master cylinder (**1**) to thereby cause the feeding of said master plate toward the master cylinder;

master plate feed cam means (**60, 63, 79**) having a neutral position in which it is out of driving connection with the gripping means (**98**) and a released position in which it is drivingly connected with the gripping means (**98**) of the master cylinder (**1**) for temporarily opening the gripping means (**98**) only at a defined rotational position of the master cylinder (**1**) with respect to the feed tray (**89**) to cause the gripping means to receive the leading edge of said master plate fed thereto, and for thereafter closing the gripping means to hold said master plate;

means (**28, 47, 53**) for drivingly connecting the actuation member (**4**) with the master plate feed command means (**58**) and with the master plate feed cam means (**60, 63, 79**) for moving the two last mentioned means from their neutral to their released positions when the actuation member (**4**) is moved from its neutral position (**4**) to its first position (**4A**) to thereby feed said master plate (**90**) from said stack of master plates (**90**) on the master plate feed tray (**89**) to the master cylinder (**1**); and

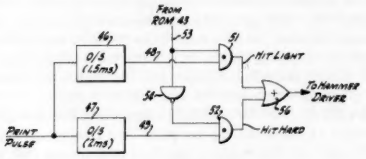


means (**18**) for selectively disabling the driving connection between the actuation member (**4**) and the master plate command means (**58**) and the master plate feed cam means (**60, 63, 79**) to thereby selectively prevent the feeding of said master plate (**90**) from the master plate feed tray (**89**) to the master cylinder (**1**) when the actuation member (**4**) is moved from its neutral position to its first position (**4A**), said disabling means (**18**) comprising a switching actuation member (**18**) and means for mounting the switching actuation member (**18**) on the actuation member (**4**) for movement between a neutral position with respect to the switching member (**4**) in which it does not interfere with the driving connection of the switching member (**4**) with the master said command means (**58**) and the master plate feed cam means (**60, 63, 79**) to thereby allow the switching member (**4**) to cause the feeding of said mater plate (**90**) toward the master cylinder (**1**) when the switching member (**4**) is moved from its first to its second position, and a released position with respect to the switching member (**4**) in which the switching actuation member (**18**) disables the driving connection between the actuation member (**4**) and the master plate feed command means (**58**) and the master plate feed cam means (**60, 63, 79**) to thereby prevent the feeding of said master plate (**90**) from the master plate feed tray (**89**) in response to moving the switching member (**4**) to its first position, and to thereby allow for manual feeding of said master plate (**90**).

3,858,509
CONTROL LOGIC FOR PRINT WHEEL AND HAMMER OF HIGH SPEED PRINTING APPARATUS

Willy J. Grundherr, Sunnyvale, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed July 10, 1972, Ser. No. 270,178
Int. Cl. B41j 9/00
U.S. Cl. 101—93 C **4 Claims**



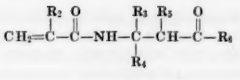
1. Printing apparatus for printing on a record medium having a rotary wheel supporting a plurality of type elements having predetermined characters sequentially arranged around said wheel and transducer means having at least one movable member for effecting positioning of a selected type element at a stationary printing position in which a hammer is actuated to cause said selected type element to print a character on said record medium comprising: means for driving said hammer; stationary memory means for storing electronically a plurality of binary coded identification words each corresponding to one of said type elements, said words being related to the sequential physical location of said type elements around said wheel each of said identification words including a binary bit for indicating the hardness with which said hammer is to strike a selected type element, said identification words being accessed out of said memory means in response to a standard input code to said memory means for effecting positioning of said selected type element at the printing position and simultaneously providing an indication of the hardness with which the selected type element is to be struck by the hammer; and hammer logic means responsive to said binary bit for actuating said hammer driving means in accordance with the binary value of said bit.

3,858,510
RELIEF STRUCTURES PREPARED FROM PHOTOSENSITIVE COMPOSITIONS

Tsunetoshi Kai; Mitsuhiro Inoue, both of Saitama; Matuo Yoshida, Asaka, and Jun-Ichi Ueda, Wakoh, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 201,992, Nov. 24, 1971, Pat. No. 3,794,494. This application Sept. 7, 1973, Ser. No. 395,083
Claims priority, application Japan, Mar. 11, 1971, 46-13009
Int. Cl. G03c 1/70
U.S. Cl. 101—395 **5 Claims**

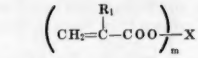
1. A relief structure suitable for use as a printing plate comprising a base and raised portions thereon, said raised portions comprising a polymer of (A) about 100 parts by weight of an unsaturated polyester produced from an alcoholic component comprising at least one polyol and an acidic component comprising at least one unsaturated dicarboxylic acid, its anhydride or its methyl or ethyl ester and having an average molecular weight of about 400 to 30,000 and an ethylenic double bond equivalent of about 160 to 3,200, (B) about 10 to 50 parts by weight of an ethylenically unsaturated compound (i) of the formula



wherein

R_2 represents a hydrogen atom or methyl group,

R_3, R_4, R_5 and R_6 represent an alkyl group or cycloalkyl group having at most 10 carbon atoms, and about 10 to 100 parts by weight of a compound (ii) of the formula



wherein

R_1 represents a hydrogen atom or methyl group,

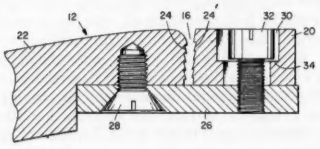
m is an integer from 2 to 4, and

X represents a radical or a polyol having a molecular weight of at most 1,000 and m terminal hydroxy groups from which the terminal hydroxy groups are excluded.

3,858,511
FLEXIBLE PLATE SADDLE LOCK-UP SYSTEM

Richard L. Moyer, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 27, 1973, Ser. No. 336,320
Int. Cl. B41f 27/12
U.S. Cl. 101—415.1 **1 Claim**



1. A printing saddle for mounting flexible printing plates comprising:

a semi-cylindrical saddle adapted to be attached to a printing cylinder, said saddle having a leading edge and a trailing edge, said leading edge containing means to secure one end of a printing plate and said trailing edge containing means to secure and tension the other end of a printing plate, said leading edge further comprising:

a base plate having a contact surface on its forward edge, said base plate having an underlying forward projecting ledge continuing past said forward edge;

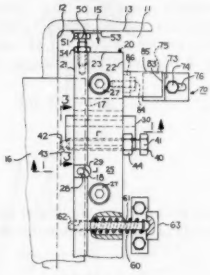
an axially transverse clamping bar slideably connected to the top of said ledge of said base plate at the leading edge thereof, said clamping bar and the contact surface of said base plate defining a groove therebetween for receiving one end of a flexible printing plate, said clamping bar having a radially extending cylindrical bore therethrough; and

a cam member comprising two cylindrical sections that are axially offset with respect to each other, one of said sections seated within said cylindrical bore and the other section rotatably connected to said ledge of said base plate, rotation of said cam member moving said clamping bar toward said base plate to effect clamping of the printing plate.

3,858,512
LOCK-UP MECHANISM FOR FLEXIBLE PRINTING PLATES PROVIDING IMPROVED REFERENCE ADJUSTMENT

Claus Simeth, Offenbach, Germany, assignor to Roland Offsetmaschinen-fabrik Faber & Schleicher AG, Offenbach/Main, Germany

Filed Mar. 22, 1973, Ser. No. 343,848
Int. Cl. B41f *1/28*
U.S. Cl. 101—415.1 **11 Claims**



1. A plate lock-up mechanism for securing and adjusting a flexible printing plate on a plate cylinder having a longitudinal groove formed therein, comprising, in combination, a plate mounting bar extending longitudinally in the groove and having means for registerably engaging the end of the plate, means for supporting the bar for limited circumferential and axial movement, means including adjusting screws spaced along the bar and extending in a circumferential direction for adjusting the circumferential position of the bar and plate, means engaging the bar in the axial direction for adjusting the axial position of the bar and plate, reference members seated in the groove adjacent the ends of the bar, index members of corresponding profile secured to the bar and closely overlying the respective reference members, the index members and reference members having cooperating circumferentially facing flat surfaces and axially facing flat surfaces and so positioned that when the flat surfaces are respectively in visual coplanar alinement the mounting bar and plate occupy a precise reference position on the cylinder, with any slight departure from reference position by reason of subsequent adjustment being indicated in direction and amount by the offset between the surfaces.

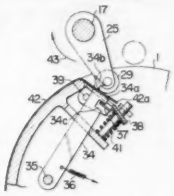
3,858,513
DEVICE FOR CLAMPING THE TRAILING END PORTION OF A SHEET TO A DRUM

Keisuke Murata, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed July 27, 1973, Ser. No. 383,158
Claims priority, application Japan, Aug. 8, 1972, 47-79257
Int. Cl. B41f *27/06*
U.S. Cl. 101—415.1 **6 Claims**

1. A device for clamping the trailing end portion of a sheet mounted on the peripheral surface of a rotating drum comprising:

a. clamping means disposed within an opening in the drum surface and mounted for pivoting between an inner position and an outer position, said clampling means comprising:
   i. a plurality of plate members each having a free end with an adjacent recess;
   ii. hook means on each of said plate members for hooking the trailing end of the sheet when brought into contact therewith; and
   iii. spring means for urging said plate members toward said inner position;
b. hold-plate means disposed within said opening adjacent to said clamping means and mounted for pivoting between an inner position and an outer position, said hold-plate means comprising:
   i. a pivoted hold-plate disposed adjacent said plate members in a position in which said hook means extend thereby outwardly of said opening;
   ii. stop means on said hold-plate engaging the free ends of said plate members for preventing said clamping means from pivoting to its inner position; and
   iii. spring means for urging said hold plate toward its outer position;
c. a shaft mounted for rotation ajacent said drum;
d. rotating means for rotating said shaft;
e. spring clutch means for operatively connecting, when engaged, said rotating means and said shaft to urge said shaft to rotate;



f. lock means for maintaining said spring clutch means disengaged;
g. sheet hold-down means mounted on said shaft for rotation therewith and including roller means thereon for pressing said sheet against the periphery of said drum and bringing the trailing end of said sheet into contact with said hook means for hooking thereby; and
h. means responsive to the rotation of said drum for engaging said spring clutch means when said lock means is released, to urge said shaft to rotate whereby said roller means, urged to rotate with said shaft, upon bringing the trailing end of the sheet into contact with said hook means in said opening, pivots said hold-plate means to its inner position causing the stop means thereon to enter the recesses adjacent the free ends of said plate members permitting said clamping means to pivot to its inner position drawing the trailing end portion of said sheet into said opening and maintaining said sheet in contact with the surface of the drum.

3,858,514
DATA ACCUMULATION SYSTEM PROVIDING MAGNETIC TONER POWDER RECORDING

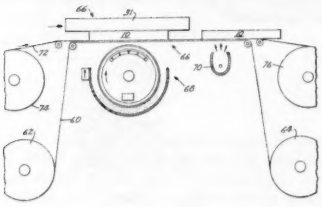
Wayne M. Beebe, Stillwater, and Richard E. Fayling, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 28, 1972, Ser. No. 284,071
Int. Cl. G01d *15/20;* **B41m** *1/22*
U.S. Cl. 101—426 **23 Claims**

1. A method for accumulating data for processing in electronic processing equipment, comprising the steps of providing a magnetizable master source document, magnetizing said master source document in a discrete pattern to provide external magnetic fields representative of data related to said document, receiving a transfer sheet adjacent the master source document to cause the external magnetic fields to extend through the transfer sheet to form an image of said pattern on the transfer sheet, and said pattern from the transfer sheet to provide an electrical signal representative of said data for electronic data processing,

wherein the step of providing said magnetizable master source document comprises providing a homogeneous

sheet of particulate permanent magnet material in a flexible binder for enabling said magnetization in a discrete pattern throughout the sheet, said sheet having a coercive force of not less than 1,000 oersteds and a maximum energy product of not less than 5×10^5 gauss-oersteds for enabling said document to provide external magnetic fields which can be sufficiently intense to allow the selective attraction of magnetic toner powder onto the surface of the transfer sheet which is opposite to that surface thereof adjacent the master source document even though the transfer sheet is separated from the toner powder supply, and wherein the method further comprises the steps of applying magnetic toner powder adjacent said opposite surface of the transfer sheet when the



master source document is adjacent the transfer sheet to cause the toner powder to be selectively attracted onto said opposite surface by said external magnetic fields to form a visible magnetic image of said pattern on the transfer sheet, of providing a low reluctance ferromagnetic member positioned adjacent a surface of said document away from said transfer sheet to form a low reluctance path for the lines of flux associated with said external magnetic fields to intensify the external magnetic fields which extend through the transfer sheet from the master source document, and of providing a magnetic bias field for reinforcing the external magnetic field patterns of a so magnetized master source document when the document is positioned adjacent said transfer sheet.

3,858,515

PROJECTILE FUSE

Maurice Rusbach, Geneva, Switzerland, assignor to Sarmac S.A., Geneva, Switzerland

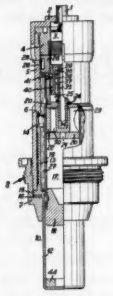
Filed Aug. 21, 1972, Ser. No. 282,112

Claims priority, application Switzerland, Sept. 6, 1971, 13020/71

Int. Cl. F42c *15/24*

U.S. Cl. 102—56 **4 Claims**

1. A projectile containing an explosive charge, and at the forward end of the projectile a fuse comprising a primer fixedly mounted in a forward portion of the fuse, a detonator containing an explosive charge, means defining a firing passageway between the primer and the detonator such that when the passage-way is open and the primer is fired, the primer will fire the detonator, means mounting the detonator for movement between a forward inactive position forward of and outside the explosive charge of the projectile and a rear active position to which the detonator moves by inertia when the projectile is fired and in which rear position the detonator is within the charge of the projectile, the fuse having fixed closure means which close said passageway in the forward position of the detonator and open said passageway in the rear position of the detonator, said detonator having movable closure means which move rearwardly with said detonator and close said passageway when said detonator moves toward said rear active position and which move forwardly relative to the detonator and open said passageway upon deceleration of the projectile, spring means resisting said rearward movement of the detonator and yieldably maintaining the detonator in said



forward inactive position forward of and outside the explosive charge, and means to lock said detonator in said rear position.

3,858,516

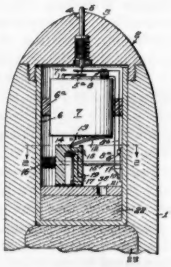
THERMAL ARMING SYSTEM

Jacob Rabinow, Takoma Park, Md., assignor to The united States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 20, 1951, Ser. No. 222,124

Int. Cl. F42c *15/00*

U.S. Cl. 102—70.2 R **1 Claim**



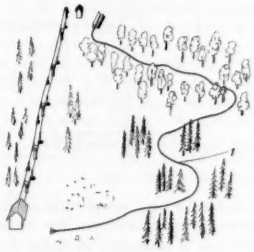
1. An improved arming mechanism for use in a missile comprising: a nose member affixed to a cylindrical housing member, a spring loaded striker slidably mounted in said nose member, the first end of said striker protruding from the outermost surface of said nose member, the second end of said striker extending into said housing, a battery positioned in that end of said cylindrical housing member adjacent said nose member, a switch positioned between said second end of said striker and said battery and affixed to one end of said battery, said switch being so arranged as to be contacted and closed by said second end of said striker when said first end of said striker is pressed against said spring, a booster charge in the opposite end of said housing, a barrier adjacent the booster charge, a flash port in said barrier, an arming rotor having an arm extending therefrom, said rotor positioned intermediate said barrier and said battery, a detonator in said arm provided with leads connecting it to a pair of contacts on one surface of said arm, a pair of contacts connected to said switch, the pair of contacts on the arm surface being in circular alignment with the pair of switch contacts, a spiral bimetallic heat-responsive member having one end anchored to said battery and the other end anchored to said rotor, said spiral member unwinding in response to heat and causing said rotor to rotate,

the rotation of said rotor arming said fuze by aligning said detonator with said flash port and pressing the pair of contacts on said arm into engagement with the switch contacts, said spiral member winding upon subsequent cooling and causing rotation of said rotor back to the position where the detonator is out of alignment with said flash port, said fuze thereby being disarmed.

3,858,517
RECREATIONAL FACILITY

Jochen Luck, and John Thorpe, both of Wetter, Germany, assignors to Demag, A.G., Duisburg, Germany and Karl Freiherr von Wendt, Gevelinghausen, Germany

Filed Mar. 16, 1973, Ser. No. 341,901
Claims priority, application Germany, Aug. 18, 1972, 2240647
Int. Cl. A63g *1/00*
U.S. Cl. 104—69 **8 Claims**



1. A recreational facility installed at a mountain slope including a passenger lift comprising an elongated slide means installed at said slope and consisting of a plurality of straight and curved prefabricated slide segments joined together in a predetermined downhill course, and a sled means for traversing said elongated slide means, said sled means comprising
   a. an elongated mat-like means having passenger supporting means at upper surfaces thereof and course-engaging means at lower surfaces thereof;
   b. brake shoe means disposed along the central longitudinal axis of said mat-like means;
   c. said brake shoe means being selectively displaceable downwardly of said mat-like means to engage said course and to controllably retard the motion of said mat-like means; and
   d. actuating lever means mounting said brake shoe means at a lower end thereof and mounting a handle means at an upper end thereof.

3,858,518
ELEVATED TRANSPORT SYSTEM

Alexander Nyman, 43 Bretton Rd., Dover, Mass. 02030

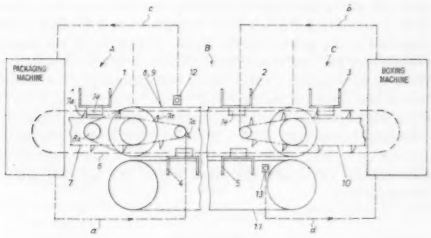
Filed Mar. 27, 1972, Ser. No. 238,446
Int. Cl. E01b *25/22*
U.S. Cl. 104—88 **15 Claims**

1. A system for transporting a given load comprising:
   a substantially level track, consisting of rigid sections of uniform lengths, with individual support for each section;
   a plurality of transport units each of which is adapted to carry a relatively small portion of said load;
   a guide rail serving as propulsion track;
   a drive cable within said rail and a series of trolleys attached to said cable at distances approximating the length of each track section;
   a coupling element for each of said trolleys, whereby said transport units are attached to said trolleys and propelled by said cable, while the track loading per section is minimized by uniform load distribution among said section length distances.

3,858,519
TRANSFER CONVEYOR ASSEMBLY

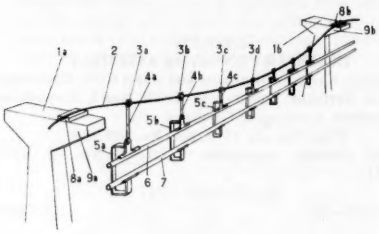
Leo Masino, Karlsruhe-Durlach, and Horst Guth, Grotzingen, both of Germany, assignors to E. Th. Noack Verpackungsmaschinen, Grotzingen, Germany

Filed Oct. 26, 1973, Ser. No. 409,886
Claims priority, application Germany, Nov. 2, 1972, 2253632
Int. Cl. F04d *13/12*
U.S. Cl. 104—88 **7 Claims**



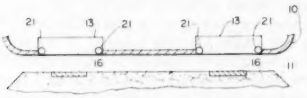
1. A transfer conveyor assembly for carrying articles from a first article handling machine to a second article handling machine, comprising in combination:
   a. a plurality of individual receptacles for receiving said articles;
   b. a guide means extending between said article handling machines for guiding each said receptacle in its travel from one article handling machine to the other;
   c. a receiving portion disposed along the path of said guide means, said receiving portion including a first conveyor means extending from said first article handling machine and having means for a forced, synchronized transport of said receptacles;
   d. a transfer portion disposed along the path of said guide means, said transfer portion including a second conveyor means extending from said first conveyor means and having means for a non-forced transport of said receptacles to provide for a possible accumulation of receptacles on said second conveyor means;
   e. a discharge portion disposed along the path of said guide means, said discharge portion including a third conveyor means extending from said second conveyor means to said second article handling machine and having means for a forced, synchronized transport of said receptacles;
   f. means for controlling the motion of said first conveyor means as a function of the operation of said first article handling machine;
   g. means for controlling the motion of said third conveyor means as a function of the operation of said second article handling machine; and
   h. means for driving said second conveyor means.

3,858,520
CONVEYOR OF THE TELEFERIC KIND WITH CARRYING CABLE
Pierre Patin, 9 rue Nicolas Houel, 75005 Paris, France
Filed Nov. 21, 1972, Ser. No. 308,451
Claims priority, application France, Nov. 16, 1971, 71.40934
Int. Cl. E01b *25/22*
U.S. Cl. 104—89 **12 Claims**



1. A suspended vehicle support system of the rope-way kind comprisng a carrying cable fixed on pylons and provided at intervals along its length with hangers carrying at their lower ends a travelling track which comprises two tubular guides disposed in the same vertical plane, at least along the aligned sections of the system, and G-shaped brackets respectively fixed on said guides by their ends and fastened to the hangers which are fixed to the carrying cable; which track, between successive pylons, forms with said cable and hangers a catenary suspension with rigidity girder which provides a resistance to lateral movement of the suspended vehicle and substantially eliminates the sensitivity of the carrying cable to violent winds.

3,858,521
MAGNETIC LEVITATION GUIDANCE SYSTEM
David L. Atherton, Kingston, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Mar. 26, 1973, Ser. No. 344,933
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 SS **2 Claims**



1. A magnetic levitation guidance system for levitated vehicles comprising:

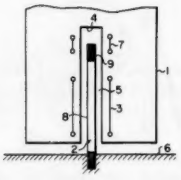
a. first and second fixed parallel continuous metal strip conductors mounted in parallel relation on a continuous guideway, each of said strip conductors having generally straight longitudinal edges and having a lateral cross-section providing increased current carrying area at the edges relative to the central portions of the strips,

b. first and second sets of cryogenic current carrying coils or magnets on the vehicle positioned in relation to the fixed conductors such than on relative motion of the magnets in relation to the fixed conductors eddy currents are induced in the fixed conductors resulting in magnetic fields providing levitation forces on the vehicle.

c. the two longitudinal portions of the conductors or edges of the first set of magnets on the vehicle being positioned when the vehicle is over the guideway such that they lie outwardly in the lateral sense of the two edges of the first metal strip, such as to provide lateral restoring forces to the vehicle tending to return the vehicle to a central position, and

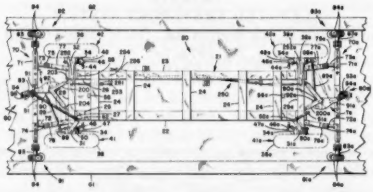
d. the two longitudinal portions or edges of the second set of magnets on the vehicle being positioned when the vehicle is over the guideway such that they lie outwardly in the lateral sense of the two edges of the second metal strips such as to provide lateral restoring forces to the vehicle tending to return the vehicle to a central position.

3,858,522
LINEAR MOTOR FOR HIGH SPEED RAILROADS
Naoki Maki, Ibaraki-ken, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed June 11, 1973, Ser. No. 368,610
Claims priority, application Japan, June 15, 1972, 47-59689
Int. Cl. H02k *41/00*
U.S. Cl. 104—148 LM **3 Claims**



1. A linear motor for high speed railroads comprising at least one armature coil of substantially rectangular form which has a first pair of sides parallel to the direction of the movement of the vehicle and a second pair of sides perpendicular to the direction of the movement of the vehicle and at least one field coil disposed opposite to said second pair of sides of said armature coil so that a propelling force is generated by the reaction between the current flowing through said second pair of sides of the armature coil and the magnetic field produced by said field coil, characterized in that means are provided for producing a second magnetic field across at least one of said first pair of sides of said armature coil so that a levitating or stabilizing force is generated by the reaction between the current flowing through said first pair of sides of said armature coil and said second magnetic field.

3,858,523
VEHICLE STEERING MECHANISM
Harvey C. Allsup, Jr., Fort Worth, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.
Filed Mar. 30, 1973, Ser. No. 346,562
Int. Cl. B61f *9/00*
U.S. Cl. 104—247 **5 Claims**



1. A vehicle steering mechanism for a pair of transversely aligned vehicle supporting wheels turnable about substantially vertical axes and connected by a transversely extending axle, said mechanism including:

a steering control member mounted on said vehicle for movement relative thereto;

a linkage connecting said control member to said wheels for causing said wheels to turn about said vertical axes upon relative movement between said control member and the vehicle,

said linkage including a motion translating device having a body mounted on the axle for pivotal movement about a first axis,

an input member connected to said control member and movable therewith,

said input member being connected to said body for pivotal movement about a second axis;

an output member pivotal about a third axis relative to said body and connected to said wheels; and

adjustable connecting means connecting said output member to said body for selectively varying the position of said output member relative to said body to cause said third axis to be positionable between said first and second axes wherein said output member is in a first position relative to said body and to cause said first axis to be located between said second and third axes wherein said output member is in a second position relative to said body whereby said output member is moved in the same direction as the input member when the output member is in said first position and in a direction opposite the direction of movement of said input member when the output member is in said second position to cause the wheels to turn in one direction upon a movement of the control member in a given direction when the output member is in said first position and to turn in a direction opposite said one direction when the output member is in said second position.

3,858,524

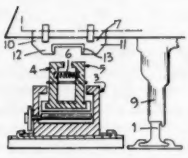
SYSTEM FOR HALTING RUNAWAY ELECTRICALLY POWERED TRAIN

Roy C. Stones, 20401 Almeda St., Castro Valley, Calif. 94546

Filed Dec. 27, 1973, Ser. No. 428,786

Int. Cl. B61k *7/06*

U.S. Cl. 104—249 **5 Claims**



1. A system for bringing a runaway powered train to a stop at the end of an outlying and terminal station, said system comprising

several hundred feet of dead rail spur track extending from powered track and electrically insulated therefrom and inclining gradually in elevation with distance from the powered track;

a dead split skid track extending alongside and spaced from and parallel to the dead spur track and inclining at a greater angle of inclination than the spur track, the skid track comprising a pair of spaced parallel rails and spring means between the spaced rails biasing the rails away from each other; and

a plurality of skid blocks mounted on each car of the train, each skid block comprising a substantially U-shaped integral member having a pair of spaced parallel legs and a joining bridge forming inner surfaces thereof and having brake lining material thereon and moving into contact with the rails of the split skid track when the train rolls on the spur track.

3,858,525

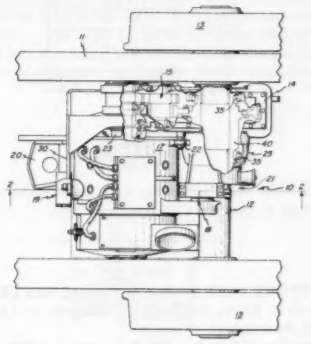
TRACTION MOTOR HOUSING SUSPENSION

John Donovan Butine, and Martin Jay Hapeman, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Nov. 3, 1972, Ser. No. 303,307

Int. Cl. B60k *1/00*; **B61c** *3/00*, *9/48*

U.S. Cl. 105—136 **9 Claims**



1. An improved suspension arrangement for traction vehicles of the type having a truck frame, a plurality of wheel mounted axles attached thereto and a motor drivably connected through a housed gear train to at least one of the axles in a parallel drive relationship wherein the improvement comprises:

a. a rigid drive connection from the gear train to the axle for transmitting torque thereto;

b. bearings for rotatably supporting the gear train housing on the axle;

c. a flexible coupling between the motor drive shaft and the gear train so as to provide for slight misalignments therebetween;

d. a resilient mounting means providing spaced connections between the motor frame and the gear train housing which totally supports the motor and permits relative movement therebetween; and

e. a single resilient connection between the gear train housing and the truck frame to provide positive placement of the housing against torque reaction movement; wherein relative vertical, longitudinal, and transverse movement between the axle and truck frame is facilitated, and the motor is totally supported by resilient mounts so as to be isolated from vibration and shock from the wheels.

3,858,526

PALLETIZATION OF NONRIGID ELEMENTARY LOADS

Paul Lombard, Saint-Germain-en-laye, and Andre Mousset, Sainte-Genevieve-des-bois, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Aug. 11, 1972, Ser. No. 279,862

Claims priority, application France, Aug. 19, 1971, 71.30178; Mar. 14, 1972, 72.08789

Int. Cl. B65d

U.S. Cl. 108—51 **3 Claims**

1. A unitized palletized assembly comprising:

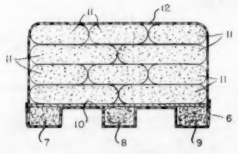
a. means including a plurality of rigid blocks, said blocks providing support for a load on a surface and arranged in spaced relation in an array to provide at least one elongated tunnel therebetween;

b. a thin plate supported by and removable from the array of elements;

c. a load including at least one elementary load member to be palletized carried by said plate; and

d. a flexible film completely surrounding each of said load,

thin plate and array of blocks and shrunken into place with said film substantially conforming to the surface of



said thin plate and array of blocks outlining each said tunnel to provide a unitized assembly.

3,858,527

SUPPORT BASE FOR A STORAGE RECEPTACLE

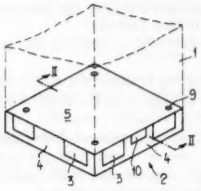
Anton Reis, Erlen, Switzerland, assignor to Lienhard AG, Erlen, Switzerland

Continuation of Ser. No. 260,561, June 7, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,143

Claims priority, application Switzerland, June 11, 1971, 8551/71

Int. Cl. B65d *19/44*

U.S. Cl. 108—55 **10 Claims**



1. A storage receptacle, such as a chest of drawers, which can be lifted or picked up by a lifting vehicle, such as a fork lift truck, comprising a storage member, a support base for said storage member especially constructed for stacking and transportation purposes, said support base comprising a rectangular planar closed surface upper cover plate, an upright side wall secured to and extending downwardly from each of the peripheral sides of said cover plate, the lower ends of said side walls being bent inwardly to form a narrow marginal support strip along the bottom of said side walls with said support strip being substantially parallel relative to said cover plate and arranged to provide a hollow rectangular base surface, the inner sides of said support strip being bent upwardly toward said cover plate with the upper end of the upwardly bent inner sides being spaced below said cover plate and forming reinforcement for the support strip, said side walls forming in combination with said cover plate and support strip a space closed laterally and at its top, each of said side walls having openings therethrough for accomodating the lifting member of the lifting vehicle with the lifting member being inserted through the openings in one of the side walls into the laterally closed space so that the lifting member can be inserted along any of the side walls of said support base, and a guide member positioned within the closed space formed by said support base for guiding the lifting member as it is inserted through the openings in one of said side walls.

3,858,528

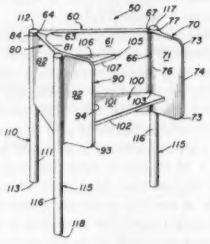
LIBRARY CARREL

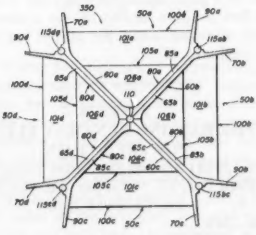
Warren D. Petersen, St. Charles, Ill., assignor to Interlake, Inc., Chicago, Ill.

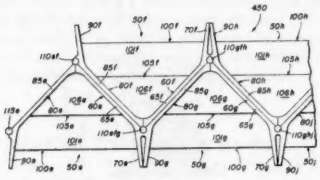
Filed Feb. 9, 1973, Ser. No. 330,970

Int. Cl. A47b *87/00*

U.S. Cl. 108—60 **5 Claims**







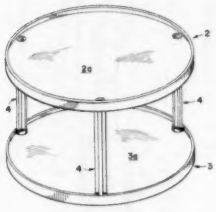
1. A nestable carrel, comprising two vertically extending side walls with the outer surfaces thereof disposed at an angle of 90° meeting at a juncture therebetween, a longitudinally extending cylindrical groove at said juncture having an arcuate extent of 90°, a longitudinally extending cylindrical groove on the outer surfaces of each of said side walls at a point spaced away from said juncture having an arcuate extent of 120°, three elongated hollow cylindrical legs secured to the outer surfaces of said side walls to provide support therefor, means for connecting one of said legs to said cylindrical groove at said juncture and for securing the others of said legs to respective ones of said groove in said side walls, said connecting means extending into each of said hollow cylindrical legs to preserve the smooth exterior surfaces thereof, the outer surfaces of said side walls being smooth and planar and the extensions thereof in one direction meeting at the geometrical center of said one leg and the extensions thereof in the other direction, extending respectively through the geometrical centers of said other legs, whereby a plurality of carrels are nestable in cluster or in row configuration so that adjacent side walls of adjacent carrels are in registry along the entire

length thereof and are supported by two common legs disposed therebetween.

3,858,529
KNOCK-DOWN MULTIPLE SHELF ASSEMBLY, PARTICULARLY A LAZY SUSAN

Mack Salladay, Greentree Borough, Pa., assignor to Action Industries, Inc., Cheswick, Pa.

Filed July 9, 1973, Ser. No. 377,649
Int. Cl. A47b 49/00
U.S. Cl. 108—103 **4 Claims**



1. A knock-down multiple shelf assembly having a lower shelf and an upper shelf and a plurality of spaced rigid posts extending between the two shelves wherein:

a. each post has a central column portion of uniform transverse section terminating in a shoulder at each end with an axial neck extending centrally from the shoulder, and a key at the outer end of the neck at each end of the post, the key having at least two oppositely extending key extensions thereon the radial length of which is greater than the diameter of the neck but less than the maximum diameter of the shoulder,

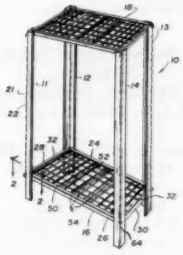
b. the upper and lower shelves having vertically aligned key slots therethrough of a contour and size for the key extensions at opposite ends of the posts to pass through but through which the shoulder ends of the posts cannot pass, the distal surface of the upper and lower trays having inclined cam surfaces extending arcuately about the key slots so arranged that when the key extensions at opposite ends of a post are passed through aligned key slots in the upper and lower shelves and the post rotated through a limited arc, any looseness is taken up and the respective shelves are clamped against the respective shouldered ends of the posts and so held by the key extensions bearing against the cam surfaces, each shelf having a well-forming wall around each key slot with a partition between the top and bottom of the well, the key slot and the surrounding inclined surfaces being provided by said partition, the key slots passing through the partition with the inclined surfaces being formed on the upper surface of the partitions on the upper shelf and the lower inclined surfaces on the lower surface of the partitions of the lower shelf, the partitions being so located in the wells that the ends of the posts when the assembly is completed are entirely within the respective wells at the top side of the upper shelf and the under side of the lower shelf.

3,858,530
ADJUSTABLE KNOCKDOWN SHELVING

Robert D. Jaffee, Skokie, and Ralph B. Olson, Lombard, both of Ill., assignors to Amco Corporation, Chicago, Ill.

Continuation of Ser. No. 228,840, Feb. 24, 1972, abandoned.
This application Dec. 3, 1973, Ser. No. 421,061
Int. Cl. A47b 9/00
U.S. Cl. 108—111 **4 Claims**

1. Knockdown adjustable shelving including in combination, four metal angle corner posts formed at an angle of substantially 90°, a rectangular shelf having a frame formed from longitudinal side and transverse end members, said longitudinal side and transverse end members being formed from metal channel stock having an upper lip portion, an intermediate body portion and a lower lip portion, respective ones of said longitudinal side and transverse end members having their upper lip portion and lower lip portion joined in a miter type joint with said intermediate body portions meeting to form substantially right angles at each corner of said shelf, each said corner post having a plurality of spaced apart holes therethrough located at the vertex of the angle and along the length thereof, a plurality of solid triangular shaped metal nuts, means for connecting said nuts in mating engagement in each of the corners of said rectangular shelf in line with a hole

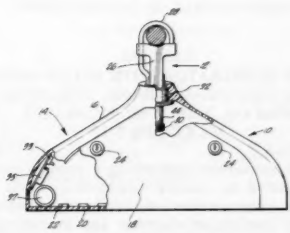


through the corner at the vertex of the angle and in engagement with both said upper and lower lip portions and said intermediate body portions of both said longitudinal side and transverse end channel members, a plurality of bolts, and a plurality of washers each washer having a groove shaped to mate with the vertex of the angle of each said corner post, said rectangular shelf being removably mounted between said four metal angle corner posts by one each of said washers being placed with said groove therein in mating engagement with said corner of a respective post and in alignment with a preselected hole therethrough to determine the height of said shelf from a reference plane, and by said bolt passing through said washer and the hole in the corner of said shelf and being threaded in said nut.

3,858,531
PORTABLE SECURITY CONTAINER

Morton K. Rubinstein, 15300 Mulholland Dr., Los Angeles, Calif. 90024

Filed July 23, 1973, Ser. No. 381,871
Int. Cl. E05g 3/00
U.S. Cl. 109—23 **36 Claims**



1. A portable container comprising:

an enclosed wall forming an interior cavity and a door hinged to said wall for enclosing said interior cavity when said door is closed and permitting entry into said cavity when said door is opened;

alarm means for effecting an alarm in response to predetermined conditions of said container, said alarm means situated within said interior cavity; and

affixing means for securing said container to an external fixture, said enclosed wall having an aperture for receiving said affixing means therein, said affixing means including first and second clamping members between which said fixture is firmly sandwiched for securing said container, and hub means positioned in said aperture for maintaining said affixing means positioned in said enclosed wall such that at least one of said clamping members extends into said cavity through said aperture to enable manipulation only from within said interior cavity to have said container secured to and removed from said external fixture.

3,858,532

FURNACE FOR INCINERATING SOLID AND LIQUID WASTE

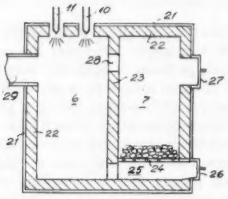
Gunnar Jorgensen, Bagsvaerd, Denmark, assignor to A/S Atlas, Ballerup and F. L. Smith & Co. A/S, Valby, both of, Denmark

Filed Aug. 16, 1973, Ser. No. 388,801

Claims priority, application Denmark, Aug. 28, 1972, 4249/72

Int. Cl. F23g *7/00*

U.S. Cl. 110—7 S **2 Claims**



1. A furnace for incinerating solid and liquid waste, comprising

a. a furnace chamber,

b. means for preheating the furnace chamber and for supplying additional heat to maintain a proper combustion temperature so as to allow for the incineration of waste of insufficinet calorific value,

c. a wall not substantially inhibiting heat transmission dividing the furnace chamber into two compartments, said wall having a connecting passage for combustion gases between the two compartments of the furnace chamber,

d. means for supplying liquid waste to one of the compartments, and solid waste to the other, and

e. separate means for supplying air of combustion to each of the compartments of the furnace chamber.

3,858,533

TRASH INCINERATOR WITH AFTER BURNER

Roy E. Lowe, 4166 Lakeview, Detroit, Mich. 48850

Filed Oct. 3, 1973, Ser. No. 403,027

Int. Cl. F23g *5/12*

U.S. Cl. 110—8 C **9 Claims**

1. A trash incinerator comprising a primary combustion chamber adapted to receive combustible waste material therein, a secondary combustion chamber superimposed over said primary combustion chamber and in communication therewith to receive therefrom the products of combustion of waste material in said primary chamber, a flue having an inlet connected to said secondary chamber adjacent the upper end thereof, and an outlet opening to the atmosphere above said secondary chamber, discharge means for discharging gases into said primary chamber adjacent combustible waste material received therein, a first blower having an inlet adapted to receive atmospheric air and an outlet connected to said discharge means, a first burner providing heat and an open flame in said primary chamber to at least initially partially burn combustible waste material in said primary chamber, and a second burner having a second blower discharging into said secondary chamber a stream of atmospheric air and a combustible fuel which burns with a flame to provide heat in said

secondary chamber to more completely burn therein products of combustion produced by the at least partial burning of combustible waste material in said primary chamber, said second burner being constructed and arranged to discharge said stream of atmospheric air and combustible fuel generally horizontally into said secondary chamber below and generally across the connection of said inlet of said flue with said secondary chamber, whereby pollution of the atmosphere by burning waste material is decreased.

3,858,534

SYSTEM FOR PRODUCING ELECTRIC POWER AND CONCURRENTLY DISPOSING OF GARBAGE AND REFUSE

Roy E. Berg, Fort Lauderdale, Fla., assignor to Interstate Utilities Corporation, Miami, Fla.

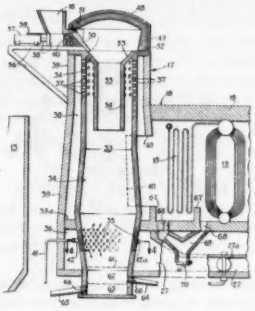
Filed Jan. 16, 1973, Ser. No. 324,088

Int. Cl. F23g *5/00;* **F22b** *33/18*

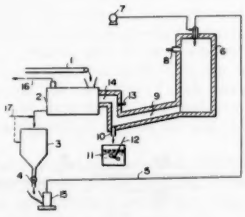
U.S. Cl. 110—8 R **14 Claims**

1. A GAR (Garbage and Refuse) disposal means capable of providing a dependable heat output over wide variations in the nature of the GAR supplied thereto, said GAR disposal means comprising a vertically elongated cupola-type furnace; means for feeding combustion air and a primary fluid fuel at the base of said furnace; means for feeding GAR at the top of said furnace; means for receiving said GAR and guiding it axially of said combustion chamber, means at one side of said furnace for discharging hot gaseous combustion products therefrom; means for guiding hot gaseous combustion products first as a central upward flow in thermal contact with at least a part of said means for receiving said GAR and guiding it axially of said combustion chamber, and then as an outer downward flow communicating with said side discharge; means at the bottom of said furnace for removing in the molten state noncombustible residue from said GAR; and, means for individu-

ally varying the feeds of said primary fuel, combustion air, and GAR to provide substantial uniformity in the heat content of the gaseous combustion products discharged from said furnace.



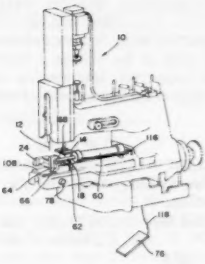
3,858,535
PROCESS FOR INCINERATING SLURRY AND APPARATUS THEREFOR
Kaoru Shiba, Tokyo, Japan, assignor to Ebara Infilco Kabushiki Kaisha, Tokyo, Japan
Filed July 12, 1973, Ser. No. 378,721
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 C **19 Claims**



1. A process for the incineration of slurry containing organic matter, comprising the steps of passing incoming slurry through a drying chamber, burning said dried slurry in dispersed condition to an ash in an incinerator, the temperature of combustion being controlled to be above the melting point of the ash formed during said incineration, passing the hot combustion gases and molten ash from said incinerator through a downwardly sloping common flue connected to said incinerator proximate the bottom thereof, said fluid having a lowest region, separating said ash in molten condition from the hot combustion gases at said lowest region and transferring the heat from said hot combustion gases to incoming slurry in said drying chamber.

11. An apparatus for incineration of slurry containing organic matter and ash-forming components, comprising a dryer for decreasing the moisture content of said slurry, an incinerator capable of operating at temperatures above the melting point of ash formed in said incinerator, means for conveying said slurry to said incinerator, a flue at the bottom of said incinerator for downwardly-leading hot combustion exhaust gas and molten slag toward said dryer for drying incoming slurry, said flue having a lowest region and an opening at said lowest region for separating fused ash from said hot combustion exhaust gas.

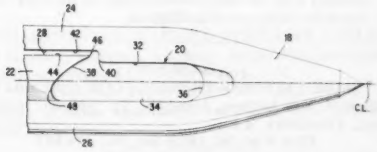
3,858,536
BUTTON SEWING ATTACHMENT
Issac Pope, 6246 N. Smedley St., Philadelphia, Pa. 19141
Filed Nov. 16, 1973, Ser. No. 416,608
Int. Cl. D05b *3/00*
U.S. Cl. 112—114 **19 Claims**



1. In a button sewing attachment for use with a button sewing machine having a cam which is reciprocal between a forward position and a rearward position, the combination of

A. a feed plate carrier arm responsive to the cam,
   1. said feed plate carrier arm being moved between a forward position and a rearward position;
B. a button chuck assembly carried upon the feed plate carrier arm,
   1. said button chuck assembly including button clamp means to hold a button in horizontal orientation,
   2. said feed plate carrier arm reciprocating the button clamp means between a forward position and a rearward position when the button is maintained in horizontal orientation;
C. operator means to rotate the button clamp means and the button through 90° and to maintain the button in vertical orientation; and
D. holding means to retain the button clamp means and the button in stationary position when the button is vertically oriented as the feed plate carrier arm is moved between the forward position and the rearward position.

3,858,537
SELF-THREADING SEWING MACHINE NEEDLE
Josef Zocher, Haaren/Aachen, Germany, assignor to The Singer Company, New York, N.Y.
Filed June 25, 1973, Ser. No. 372,459
Int. Cl. D05b *85/02*
U.S. Cl. 112—224 **3 Claims**



1. A self-threading elongated sewing machine needle including a shank adapted to be clamped to the sewing machine, a blade extending from the shank and terminating in a pointed extremity formed with a longitudinally elongated thread carrying eye, said eye comprising an aperture defined between spaced wall portions of said blade, said blade being formed

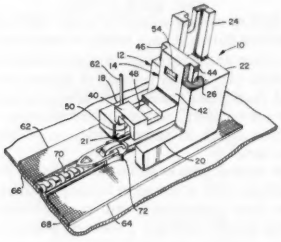
with a lengthwise thread accommodating groove extending from said thread carrying eye towards said shank, a lengthwise threading slot formed through said needle blade transversely spaced from the needle center line and terminating intermediate the upper and lower extremities of one wall portion of said eye, said threading slot opening into said thread accommodating groove at one side of said needle, a thread inlet groove formed transversely in the needle blade and opening into the threading slot, said one wall portion below the terminus of said slot being intermediate said slot and said needle center line and having a transverse shoulder merging with the transversely outer wall of said slot, said one wall portion above the terminus of said slot being arcuate and merging with the transversely inner wall of the slot at a location overlaying said shoulder and transversely intermediate said wall portion below the terminus of said outer wall of the slot.

3,858,538

SLIDE FASTENER PRESSER FOOT

William F. Van Amburg, Meadville, Pa., assignor to Textron Inc., Providence, R.I.

Filed Sept. 26, 1973, Ser. No. 399,876
Int. Cl. D05b *35/08*
U.S. Cl. 112—235 **13 Claims**



1. A slide fastener presser foot for attachment to a sewing machine presser bar assembly in order to sew the tapes of a slide fastener to material comprising

a body adapted to be attached to the sewing machine pressure bar assembly and having a bottom surface that is arranged to contact the slide fastener tapes during sewing of the slide fastener tapes to material, and

a guide member having a bottom surface with a longitudinal guide channel means therein for receiving interengaging elements of the slide fastener, said guide member being movably mounted on said body with the bottom surface of said guide member being movable from an operative position to an inoperative position that is spaced from and out of alignment with said bottom surface of said body whereby said guide member in being moved to an inoperative position permits passage of a slider of the slide fastener while said bottom surface of said body maintains contact with the slide fastener tapes as the slide fastener tapes are being sewn to material.

3,858,539

SLIDE FASTENER PRESSER FOOT ASSEMBLY

William F. Van Amburg, Meadville, Pa., assignor to Textron Inc., Providence, R.I.

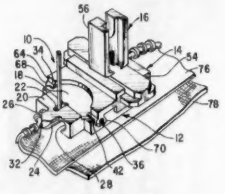
Filed Sept. 26, 1973, Ser. No. 399,877
Int. Cl. D05b *35/08*
U.S. Cl. 112—235 **10 Claims**

1. A slide fastener presser foot assembly for use with a mounting shank adapted to be attached to a sewing machine presser bar assembly to sew a slide fastener to material comprising

a presser foot component including first bearing means and having a bottom surface, a top surface, opposite sides and a longitudinal guide channel means recessed in said bottom surface for receiving interengaging elements of a slide fastener,

a pivot mount component including means slidably receiving the mounting shank and having second bearing means,

said first bearing means including a pair of laterally spaced recesses in said top surface of said presser foot component,



said second bearing means including a pair of laterally spaced pivots received in said recesses and engaging said first bearing means to pivotally mount said presser foot component on said pivot mount component, and

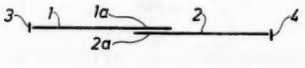
said pivot mount component including a pair of spaced side walls engaging the opposite sides of said presser foot component during pivotal movement of said presser foot component relative to said pivot mount component.

3,858,540

MAKING CONTINUOUS JOINT BETWEEN FLAT SHEETS

Knut Berg, Saltsjobaden, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Dec. 4, 1972, Ser. No. 311,766
Claims priority, application Sweden, Dec. 9, 1971, 15839/71
Int. Cl. B21d *19/00*
U.S. Cl. 113—54 **2 Claims**



1. An apparatus comprising a working table having an upper surface and provided with pressing rollers, the upper rollers being supported in a beam and driven by a drive motor, and conveying tables coplanar with said upper surface and located on both sides of said working table with roller conveyors for work elements, said tables along their lateral edges provided with control means, for conveying the work elements along the plane of said tables in a straight-line path in which the inner edge portions overlap, the lower surface of the beam being located at a distance above the upper plane surface of the working table exceeding the total thickness of the overlapping edge portions of the work elements, the pressing rollers adjacent the feed end of said table operable to bend down said edge portions to separate them and form a free space between said work elements, the beam being connected with the work-

ing table by a beam holder in said free space having a length in the conveying direction of the work elements somewhat shorter and a width somewhat smaller than the aforesaid free space between the bent-down and separated edge portions the pressing rollers located immediately after said free space being provided with a substantially horizontal axle and adapted to lift only one edge portion to join closely the other edge portion, and the remaining pressing rollers located after the free space in the direction of feed of said elements being inclined to the horizontal plane to wrap said other free edge portion around said one edge portion and interlock the same, followed by at least one pair of pressing rollers with substantially horizontal axles and a substantially plane nip surface to flatten said interlocked positions into said conveying plane.

3,858,541

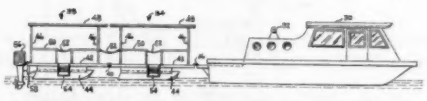
MODULAR BOAT SYSTEM

John C. Metcalf, Jr., 431 Bell Ave., Livermore, Calif. 94550, and Klaus Silbermann, 102 Plaza Ct., Danville, Calif. 94526

Filed May 31, 1973, Ser. No. 365,541

Int. Cl. B63b *35/44*

U.S. Cl. 114—43.5 **1 Claim**



1. A modular boat system comprising:

a. a primary powered boat;

b. a first floating deck section removably hnged to the stern of said primary powered boat, said first deck section consisting of first and second deck frames held in parallel spaced relation by the tie bars and diagonal braces extending therebetween, and first and second deck panels forming a planar deck surface between said deck frames, said planar deck surface being supported above the water by floatation members attached to said deck frames;

c. a second floating deck section removably hinged to the stern of said first floating deck section, said second floating deck section consisting of deck frames, tie bars, diagonal braces, deck panels, and floatation members in the same configuration as that of said first floating deck section;

d. lateral stiffening means removably connecting the respective deck frames of said first and second floating deck sections, said stiffening means imparting increased rigidity to said hinged deck sections; and

e. winch means mounted on said primary powered boat for first folding said second floating deck section back upon said first floating deck section, and thence raising both of said deck sections from the water and supporting them upon said primary powered boat.

3,858,542

DIRECTING SAIL

Jean-Paul Lenoble, 94, rue Broca, Paris, France (75013)

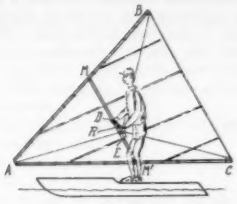
Filed Feb. 21, 1973, Ser. No. 334,436

Claims priority, application France, Feb. 22, 1972, 72.05912

Int. Cl. B63h *9/06*

U.S. Cl. 114—103 **7 Claims**

1. Sail assembly comprising a sail having three apices, two lateral spars inclined to one another and intersecting at one of said apices, to which spars the sail is attached, and a transverse spar spacing said lateral spars, said transverse spar being so positioned relative to said lateral spars that the center of gravity of the assembly lies centrally of said transverse spar and the center of thrust of said assembly coincides with or lies behind the center of gravity, and a plurality of sheets of adjustable length, a sheet being attached to said sail at each of said



apices and said sheets being joined at a central point, but being otherwise unconstrained.

3,858,543

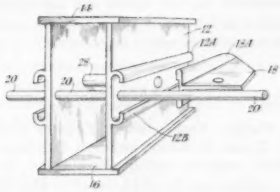
TWIN FLUKE ANCHOR HAVING REMOVABLE FLUKES

Daniel Comstock Hungerford, North Palm Beach, Fla., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 178,233, Sept. 7, 1971, Pat. No. 3,780,688. This application Sept. 7, 1973, Ser. No. 395,261

Int. Cl. B63b *21/44*

U.S. Cl. 114—208 R **4 Claims**



1. A twin fluke anchor capable of being disassembled into its component elements comprising:

a crown, said crown having an upper crown wall and a lower crown wall, and a pair of substantially parallel sidewalls connecting said upper crown wall to said lower crown wall;

a stock removably coupled through said parallel crown sidewalls;

a shank pivot means connected to and between said parallel crown walls forward of said stock;

a shank pivotally coupled to said shank pivot means;

a fluke interlocking means connected on the outside wall of each of said crown sidewalls;

a pair of flukes, each fluke having an inside edge flange slidably engageable into said interlocking means on said crown outside wall; and

a removeable connector means coupling said stock to said fluke.

3,858,544

APPARATUS FOR MARKING INSULATED CABLES

Gert Kramer, Stuttgart, Germany, assignor to International Standard Electrical Corp., New York, N.Y.

Filed Jan. 24, 1973, Ser. No. 326,216

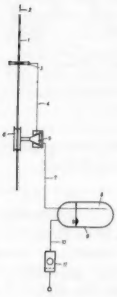
Claims priority, application Germany, Feb. 25, 1972, 2209027

Int. Cl. B05c *5/00*

U.S. Cl. 118—8 **5 Claims**

1. An apparatus for marking a longitudinal strand comprising means feeding said strand in a longitudinal path, an annular nozzle having an annular chamber surrounding said strand for spraying marking material inwardly onto said strand moving through the center of said nozzle, the inner end of said chamber having a normally closed inwardly facing annular

aperture which opens automatically under a predetermined internal material pressure, a container of marking material under a predetermined constant pressure, a pipe connected between said container and nozzle to apply said material



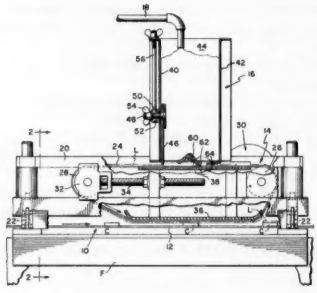
under pressure to said nozzle, and a valve device coupled to the longitudinally moving strand and connected within said pipe to control said material applied to said nozzle and strand in accordance with the speed of movement of said strand.

3,858,545

ICING DEPOSITOR

Harry A. Fischer, Frankenmuth; Kenneth Dietzel, Saginaw; Vern V. Cronk, Hemlock, and Dale E. Stimpson, Freeland, all of Mich., assignors to Baker Perkins Inc., Saginaw, Mich.

Filed Apr. 8, 1974, Ser. No. 458,987
Int. Cl. A23g *3/20*
U.S. Cl. 118—13 **5 Claims**



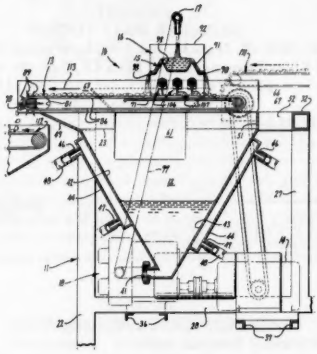
1. An icing depositor for depositing a layer of icing upon cookies moving along a first conveyor comprising a second conveyor including an endless belt, an upper run and a lower run, support means mounting said second conveyor above said first conveyor with said lower run of said belt extending in parallel overlying relationship to said first conveyor and spaced above said first conveyor by a distance approximating the thickness of a cookie with a layer of icing, drive means for driving the belt of said second belt conveyor to move said lower run at the same speed in the same direction as the opposed portion of said first conveyor, an icing hopper mounted on said support means in spaced overlying relationship with said upper run and having an opening in the bottom thereof for depositing a layer of icing on said upper run of said belt, said belt conveying icing deposited thereon into contact with cookies on said first conveyor as the icing passes along said lower run, and blade means extending across said opening normal to the direction of movement of said upper run of said belt for scraping unused icing returned by said belt from said lower run into the interior of said hopper.

3,858,546

BATTER APPLYING MACHINE

Clark K. Benson, Millbrae; Andrew A. Caridis, Foster City, and Arthur A. Nilsen, San Francisco, all of Calif., assignors to Heat and Control, Inc., San Francisco, Calif.

Filed Nov. 24, 1972, Ser. No. 309,236
Int. Cl. B05c *5/00, 11/12*
U.S. Cl. 118—16 **6 Claims**



1. Apparatus for applying batter to a food product comprising a frame, an endless food-product conveyor including top and bottom conveyor runs arranged on said frame, drive means serving to power said conveyor, a batter coating station on said frame serving to suffuse batter upon the product supported on the conveyor, said batter station including dispenser means disposed above and extending transversely of the top run of said conveyor serving to distribute batter therebelow, said conveyor comprising a pair of spaced apart shafts rotatably mounted with respect to said frame, one of said shafts being operatively coupled to said drive means, said top and bottom run of said conveyor being comprised of a plurality of laterally spaced apart, continuous, smooth surfaced elements formed from elastomeric material and reeved between said conveyor shafts, one of said shafts, intermediate said spaced apart continuous elements, being equipped with an array of radially extending tynes extending substantially above the plane of the top run of said conveyor and being arranged sufficiently close to said continuous conveyor elements so as to afford a mutual wiping action of the batter as between said tynes and said continuous conveyor elements.

3,858,547

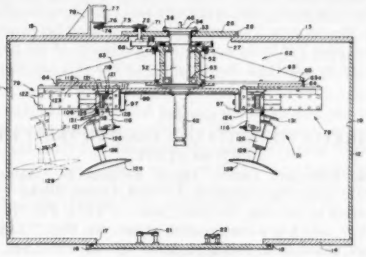
COATING MACHINE HAVING AN ADJUSTABLE ROTATION SYSTEM

Nils H. Bergfelt, 2789 Giffen Ave., Santa Rosa, Calif. 95403

Filed Dec. 14, 1973, Ser. No. 424,659
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 **14 Claims**

1. In a coating machine having an adjustable double rotation system, a vacuum chamber, at least one coating source disposed in the vacuum chamber, a plurality of spindle assemblies mounted in the chamber and each having a rotatable spindle, a substrate holder carried by each spindle and adapted to receive at least one substrate which can receive coating material from the coating source, means for orbiting the spindle assemblies about the coating source, means for rotating the spindles about their own axes of rotation during

the time that they are being rotated about the source and means for adjusting the spacing of the spindle assemblies substantially along the radial extent toward and away from the axis of rotation of the spindle assemblies about the source,



said means for adjusting including a shaft extending radially of the chamber and drive means slidably mounted on said shaft and driving said spindle and means in the chamber for driving said shaft.

3,858,548

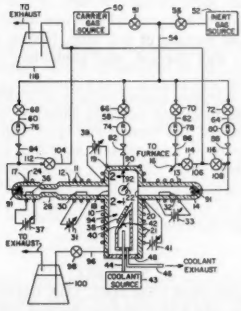
VAPOR TRANSPORT FILM DEPOSITION APPARATUS

Paul A. Tick, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 281,218, Aug. 16, 1972, Pat. No. 3,825,439. This application Feb. 19, 1974, Ser. No. 443,226

Int. Cl. C23c *13/12*

U.S. Cl. 118—49 **10 Claims**



1. A vapor transport system for depositing films of an amorphous semiconductor on a substrate comprising

a heated deposition chamber,

means in said deposition chamber for supporting said substrate,

a gas mixing chamber disposed adjacent to said deposition chamber,

first furnace means for supporting a Group IV A element selected from the group consisting of silicon and germanium, one end of said first furnace means being connected to said mixing chamber,

second furnace means for supporting a chalcogen selected from the group consisting of tellurium, selenium and sulfur one end of said second furnace means being connected to said first furnace means,

first heating means for raising the temperature of said chalcogen to a value sufficient to raise the partial pressure thereof to a value between 10^{-2} and 100 mm Hg,

second heating means for raising the temperature of said Group IV A element to a value sufficient to support a reaction between said chalcogen vapors and Group IV A element,

an exhaust line disposed on that side of said means for supporting said substrate opposite said mixing chamber for exhausting those gases which have flowed from said mixing chamber and over the surface of said substrate,

a carrier gas source,

a first gas conducting line connecting said carrier gas source to said second furnace,

means in said first line for varying the flow of carrier gas therethrough,

third furnace means for supporting an element selected from the group consisting of tellurium, selenium, sulfur, arsenic, phosphorus, chlorine, bromine, iodine, antimony, gallium, indium, and thallium, said third furnace means being connected to said mixing chamber,

third heating means for raising the temperature of the element disposed in said third furnace means to a value sufficient to raise the partial pressure thereof to a value between 10^{-2} and 100 mm Hg,

a second gas conducting line connecting said carrier gas source to said third furnace,

means in said second line for varying the flow of carrier gas therethrough,

a third gas conducting line connected to said carrier gas source for flowing a diluent stream of carrier gas into said mixing chamber,

means in said third line for varying the flow of gas therethrough,

a second exhaust line connected to said second and third furnace means, and

first and second on-off valves disposed in said first and second exhaust lines, respectively.

3,858,549

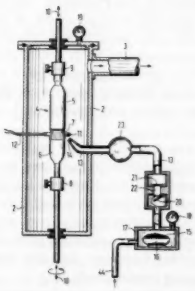
APPARATUS FOR CONTROLLED DOPING OF SEMICONDUCTOR CRYSTALS

Wolfgang Keller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Division of Ser. No. 280,853, Aug. 15, 1973, Pat. No. 3,804,682. This application Oct. 30, 1973, Ser. No. 411,089

Int. Cl. C23c *13/08*

U.S. Cl. 118—49.1 **7 Claims**



1. An apparatus for controlled diffusion of a doping material into a semiconductor crystal including:

a. a housing having a gas impermeable reaction chamber therein and a gas inlet and a gas outlet;

b. movable mounting means positioned within said reaction chamber along opposite surfaces thereof for supporting said crystal therebetween;

c. a heating means within said reaction chamber surrounding a portion of said crystal so as to define a melt zone thereon;
d. a doping material container positioned remote from said reaction chamber having a supply of a vaporizable doping material therein and a means for maintaining said doping material at a constant temmperature;
e. a conduit interconnecting said reaction chamber and said doping material container, said conduit having one end thereof terminating in the vicinity of said crystal melt zone;
f. a combination of at least two valves having a constant volume chamber therebetween located within said conduit and between said reaction chamber and said doping material container and said valves each comprising of a confining wall of said chamber;
g. a means for opening and closing said valve in accordance with a select program; and
h. a means for adjusting the pressure within said reaction chamber and within said doping material container.

3,858,550

APPARATUS FOR IMPREGNATING HORIZONTALLY TRANSPORTED CORRUGATED PAPERBOARD

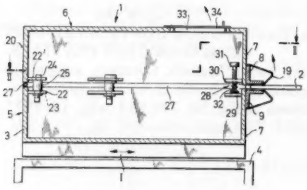
Gunther Lau, Glogauer Str. 22, 8541 Katzwang; Edmund Bradatsch, Huttenwerkstr. 5, 8481 Weiherhammer, and Hermann-J. Brandl, Virchowstr. 33, 85 Nuremberg, all of Germany

Filed Jan. 8, 1973, Ser. No. 321,788

Claims priority, application Germany, Jan. 14, 1972, 2201740

Int. Cl. B05b *13/06*

U.S. Cl. 118—50 **10 Claims**



1. Apparatus for impregnating horizontally advancing paperboard containing a succession of transversely extending flutes, wherein said paperboard advances between opposed housings communicating with said flutes and adapted to pass impregnant through said flutes from a delivery housing to the opposed receiver housing, each housing comprising
a. respective upper and lower freely communicating chambers;
b. means adjustably biasing said chambers to a generally sealing relationship at the open peripheries thereof;
c. said chambers including an elongated opening to effect said communication with said flutes, flute sealing means for sealing the flute ends from the atmosphere and for providing a communication path for impregnate moving between the housings and the paperboard flutes, said flute sealing means including
1. a moveable, heat conductive lower flange member connected with said lower chamber for sealing engagement with the lower surface of the paperboard,
2. a moveable, heat conductive upper flange member connected for movement with said upper chamber for sealing engagement with the upper surface of the paperboard,
3. said flange members being each normally of a predetermined arcuate configuration and spaced furthest from said paperboard a predetermined distance at the midpoint of the flange member, and
4. whereby upon said moveable flange members being heated by the impregnant passing therethrough, and due to the effect of said heating, assume a planar configuration and sealing relationship with said paperboard, and
d. adjusting means connected with said chambers for adjusting the pressing force with which said chambers contact the upper and lower surfaces, respectively, of the paperboard by adjusting the spacing between said chambers.

3,858,551

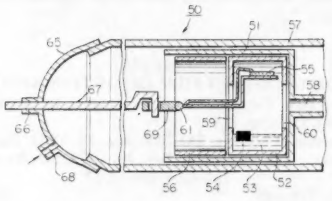
APPARATUS FOR EPITAXIAL GROWTH FROM THE LIQUID STATE

Hiroyuki Kobayasi, Osaka, Japan, assignor to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Division of Ser. No. 262,529, June 14, 1972, Pat. No. 3,827,399, which is a continuation of Ser. No. 860,772, Sept. 24, 1969, abandoned. This application Apr. 23, 1974, Ser. No. 463,406

Int. Cl. H01l *7/00*

U.S. Cl. 118—64 **1 Claim**



1. Apparatus for epitaxial growth of a film on a substrate from the liquid state comprising:
a horizontally disposed cylindrical furnace tube;
a heating coil surrounding a portion of said tube;
a cylindrical crucible, coaxial with and disposed within said surrounded portion of the tube, having an aperture in each end wall thereof, and containing a pool of said liquid; and
a rotatable substrate support axially extending through one of said apertures and including substrate clamping means at the inserted end thereof and spaced from the support axis whereby to support said substrate above said pool and whereby upon rotation of said support said substrate orbits about said support axis to sequentially immerse the substrate in said pool to effect said growth and to withdraw said substrate.

3,858,552

APPARATUS FOR COATING THE INSIDE OF PIPE

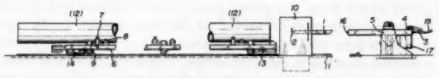
Tetsuo Takata, and Yukio Nishino, both of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo and Ohmiya Kigyo Kabushiki Kaisha, Osaka, both of, Japan

Filed Sept. 25, 1972, Ser. No. 291,564

Claims priority, application Japan, Sept. 28, 1971, 46-75031

Int. Cl. B05c *7/02*

U.S. Cl. 118—318 **1 Claim**



1. Apparatus for coating the interior surface of an elongated pipe comprising guide rails, a pipe carrying truck mounted on said rails for reciprocating movement thereon, pipe supporting rollers on said truck for a rotatable supporting of a pipe, means on said truck rotating a supported pipe in a predeter-

mined direction, a cantilevered boom aligned with said rails for selective coaxial introduction and movement of the outer end thereof into and along the entire length of a truck mounted pipe upon a reciprocating movement of the pipe truck on the rails, support means aligned with said rails and beyond the limit of movement of the truck, said boom, toward one end thereof, being mounted on said support means with the boom projecting therefrom and overlying the rails for the aforementioned introduction of the outer end thereof into a truck supported pipe, and a shaft extending longitudinally through said boom and beyond the outer end thereof, said shaft being rotatably mounted within said boom, means rotating said shaft in a direction of rotation opposite from that of the pipe to be coated, and a spray head including angularly spaced radially directed spray guns mounted on the outer end of the rotatable shaft beyond the outer end of the boom.

3,858,553

APPARATUS FOR THE EPITAXIAL GROWTH OF SEMICONDUCTING MATERIAL BY LIQUID PHASE EPITAXY FROM AT LEAST TWO SOURCE SOLUTIONS

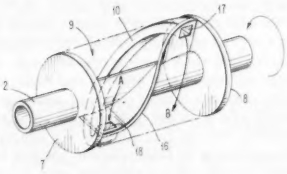
Hans-Jorg Scheel, Kilchberg, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1973, Ser. No. 415,272

Claims priority, application Switzerland, Nov. 20, 1972, 16850/72

Int. Cl. H01z *7/00*

U.S. Cl. 118—421 **14 Claims**



1. Apparatus for treating a workpiece comprising a closed rotatable chamber which is adapted to include at least one said workpiece fixed relative to said chamber and to include at least two different source liquids contained in and movable in said chamber during rotation of said chamber about an axis, said chamber having:

a plurality of channels formed by a plurality of walls to hold temporarily each said source liquid away from said workpiece and to distribute successively said source liquids onto said workpiece during said rotation about said axis.

3,858,554

INDIVIDUAL DEVICE FOR THE PROTECTION OF LOBSTERS OR SIMILAR CRUSTACEANS DURING THEIR GROWTH

Claude Marc-Andre Beaupoil, Laboratoire de Biologie marine du College de France, Concarneau, and Jean-Francois Hery, 5 square Pasquier, Nantes, both of France

Filed Sept. 18, 1973, Ser. No. 398,557

Claims priority, application France, Sept. 18, 1972, 72.33015

Int. Cl. A01k *61/00*

U.S. Cl. 119—2 **8 Claims**

1. An individual protective device for lobsters or similar crustaceans during their growth, comprising a hollow body which is heavier than water and has an open end, a closed end, and walls extending between the ends, the walls having internal surfaces which define a substantially conical cavity of a substantially elleptic cross section, the size of the cavity cross section gradually increasing from the closed end to the open end for permitting a crustacean placed in the cavity at the closed end of the body to be maintained in a natural position and to approach the open end of the body during successive casts of the shell of the crustaceans.

3,858,555

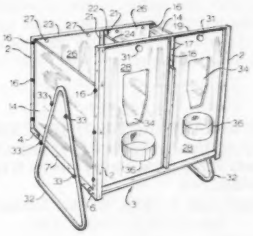
COLLAPSIBLE WEANING PEN FOR ANIMALS

Pleasant R. Smith, 69 Drakes Summit Dr., Pont Reyes Station, Calif. 94956

Filed Dec. 7, 1973, Ser. No. 422,768

Int. Cl. A01k *1/02*

U.S. Cl. 119—20 **7 Claims**



1. A collapsible animal weaning pen comprising a substantially rectangular floor frame, a foraminous floor secured to said frame, a pair of upright supports connected at the respective corners of the frame at the front side thereof to pivot over the frame, and a second pair of upright supports connected to the respective corners at the rear side of the frame to pivot over the frame, a side wall panel detachably connected to the corner supports at each side of the frame between the front and rear thereof, a support skid detachably connected to each side of the frame for supporting the floor of the pen in elevated position above a supporting surface, a panel structure forming the front side of the frame, a panel structure forming the rear side of the frame, and at least one removably mounted partition panel between the side wall panels to form at least two pen sections positioned side by side, the pen being collapsible to form a compact assembly when removable panels and the skids are removed and placed over the assembly.

3,858,556

POWER AND PROCESS PLANT

Vladimir Dmitrievich Terentiev, ulitsa Chapygina, 5, kv. 34; Efim Isaakovich Dorman, ulitsa Bestuzhevskaya 20, kv. 45; Julia Sergeevna Izmailova, Mytninskaya ulitsa, 15, kv. 25; Viktor Zinovievich Feigin, Moskovsky prospekt, 6, kv. 20; Valentina Alexandrovna Sandovskaya, Sredneokhtinsky prospekt, 43, kv. 2; Galina Jurievna Rudina, Ligovskaya ulitsa, 87, kv. 48; Jury Vasilievich Lastochkin, ulitsa Narodnaya 6, kv. 87; Leonid Matveevich Person, ulitsa 3 Internatsionala 3, kv. 304; Gennady Markovich Saxonov, Magnitogorskaya ulitsa, 2, kv. 59, all of Leningrad; Viktor Yakovlevich Yakimovich, ulitsa Sheremetieva 30, kv. 19, and Vladimir Andreevich Zaitsev, ulitsa Parkovaya 39, kv. 20, both of Belgorod, all of U.S.S.R.

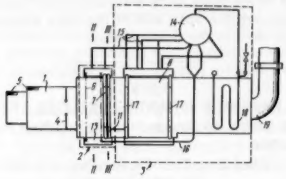
Filed Nov. 14, 1972, Ser. No. 306,553

Int. Cl. F22b *31/00*

U.S. Cl. 122—7 R **2 Claims**

1. A power-and-process plant, preferably for producing sulfurous gas, comprising: a furnace, an intermediate unit adjoining one side of said furnace and being located in the direction of gas movement; quick-release joints securing said intermediate unit to said furnace, a waste-heat boiler includ-

ing a predetermined water-flow circuit and having convection surfaces disposed in the direction of gas movement, said boiler adjoining the opposite side of said intermediate unit, said intermediate unit comprising on the side thereof adjacent to



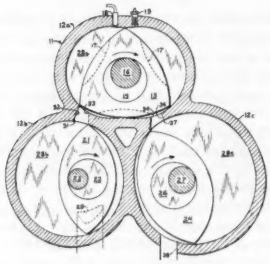
said furnace, convective tubes, water-cooling tubes communicating with at least one section of said convective tubes disposed within the intermediate unit proximate said convection surfaces of said waste-heat boiler, said intermediate unit being located in the water-flow circuit of said waste-heat boiler.

3,858,557

TWO-STAGE ROTARY ENGINE OF TROCHOIDAL TYPE

David M. Myers, Upper Saddle River, and Charles Jones, Hillsdale, both of N.J., assignors to Curtiss-Wright Corporation, Woodridge, N.J.

Filed June 4, 1973, Ser. No. 366,605
Int. Cl. F02b *53/00, 53/08*
U.S. Cl. 123—8.05 **3 Claims**



1. A compound rotary internal combustion engine of trochoidal type having a low-pressure compressor unit for inspiring a gaseous intake charge and compressing it, a power unit receiving the charge from the low-pressure compressor and compressing it further, the power unit having means for igniting the charge at a high degree of compression and being driven by expansion of the resulting combustion gases, and a low-pressure expander unit receiving the combustion gases from the power unit and being driven thereby through further expansion thereof, wherein the improvement comprises:

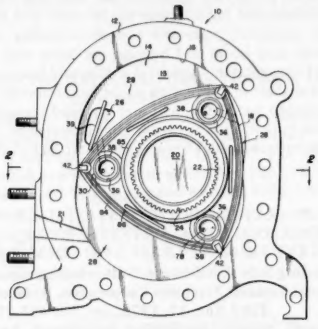
a. the low-pressure compressor having a larger displacement than the displacement of the power unit;
b. the low-pressure expander unit having a displacement about 25 percent to about 50 percent larger than the displacement of the compressor unit;
c. the low-pressure expander having a higher volumetric ratio than the volumetric ratio of the low-pressure compressor;
d. the minimum volume of the compressor unit being substantially larger than the minimum volume of the expander unit;
e. the compressor unit having a side intake port in at least one side wall, the intake port being controlled by a side face of the compressor rotor; and
f. at zero degrees of rotation of the compressor shaft the intake port being closed to both compressor chambers.

3,858,558

STRATIFIED CHARGE ROTARY ENGINE

Jack A. Hart, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 21, 1973, Ser. No. 417,729
Int. Cl. F02b *53/04*
U.S. Cl. 123—8.13 **6 Claims**



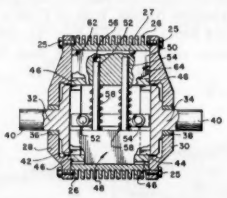
1. A stratified charge rotary internal combustion engine comprising a housing including opposed end walls in conjunction with a central peripheral wall defining a cavity, a rotor, an output shaft, an eccentric on said output shaft, said rotor planetating on said eccentric as it rotates within said cavity compressing a regular relatively lean air-fuel mixture for combustion therein, said rotor having opposite side walls each facing an adjacent one of said housing end walls, at least one precombustion chamber formed in one of said rotor side walls opening toward said adjacent housing end walls, means supplying a relatively rich air-fuel mixture to a supply inlet port strategically positioned in said adjacent housing end wall, a throat passage in said rotor connecting said precombustion chamber with said rotor cavity wherein said relatively lean air-fuel mixture is compressed, and ignition means mounted in said adjacent housing end wall igniting the relatively rich air-fuel mixture in said precombustion chamber at a precise time during rotation of said rotor whereby the ignited rich mixture burns through said throat passage torch igniting said relatively lean air-fuel mixture compressed by said rotor in said cavity.

3,858,559

COUPLED VANE ROTARY FLUID DEVICE

Albert Raymond Thomas, Jr., 7219 Gessner Rd., Houston, Tex. 77036

Continuation of Ser. No. 95,021, Dec. 4, 1970, abandoned. This application June 4, 1973, Ser. No. 366,351
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.41 **25 Claims**



1. A rotary vane internal combustion engine for burning a fuel-air mixture, comprising a combustion stage means for burning said fuel air mixture to produce rotary energy, a compression stage means for compressing and mixing of air with fuel and supplying the mixture to said combustion stage

means, and means for operatively associating said compression stage means and combustion stage means so that said compression stage means is driven by said combustion stage means, said combustion stage means comprising a housing having a peripheral wall and two end walls defining thereby a central chamber, a hollow rotor rotatably mounted in said central chamber, vanes slidably mounted within longitudinally and radially extending slots within said rotor for reciprocation in said slots from a fully retracted to a fully extended position to project beyond the rotor's periphery into continuous sealing engagement with said peripheral wall of said central chamber, said vanes, housing and rotor periphery dividing said central chamber into a plurality of circumferentially spaced working chambers, the major portion of the radial length of the vanes when in the fully extended position extending beyond the confines of said slots, and means for mounting said vanes with said rotor so that said vanes rotate with said rotor and are radially movable with respect to said rotor; said mounting means comprising support rod means coupled with each vane and rotatable with and radially movable with respect to said rotor, said support rod means providing the principal means for supporting and maintaining its coupled vane in the radial position and resisting torsional forces on said vanes tending to bend the vane in the slot out of said radial position when said vane is in its fully extended position and the said major portion of its radial length is beyond the confines of its slot, thereby to enable the ratio of the housing peripheral wall diameter to rotor periphery diameter to be maximized, said suppport rod means additionally preventing the bending of each vane along the length of each slot to maintain the vane in said continuous sealing engagement with said central chamber peripheral wall.

3,858,560

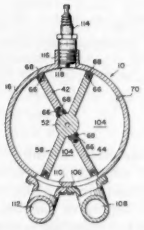
RECIPROCATING ROTARY ENGINE

James A. Harrington, Mooresville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1973, Ser. No. 419,035

Int. Cl. F02b *53/00*

U.S. Cl. 123—8.47 **6 Claims**



1. A rotary machine of the oscillating vane type having a housing defining a working chamber; a first vane assembly rotatably mounted in said worker chamber; a first drive member secured to said first vane assembly; a second vane assembly rotatably mounted in said working chamber; a second drive member secured to said second vane assembly adjacent said first drive member; each of said drive members having a driving connection slot therein; an end housing member enclosing said housing; said drive members being positioned adjacent said end housing member; a shaft rotatably journalled in said end housing member; a sprocket secured to said shaft within said housing; a pair of idler sprockets rotatably mounted on said end housing member within said housing and in spaced relation to said shaft sprocket; an endless chain disposed upon said sprockets for movement thereon; a first extended connecting pin in said chain engaging the slot in said first drive member and a second extended connecting pin in said chain engaging the slot in said second drive member whereby said first and second vane assemblies rotate and oscillate relative to one another at varying speeds causing adjacent vanes to approach and recede from each other thereby providing inlet, compression, expansion and exhaust cycles during each revolution of said vane assemblies.

3,858,561

ELECTRONIC FUEL INJECTION CONTROL SYSTEM

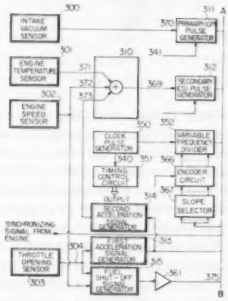
Shigeo Aono, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Sept. 21, 1973, Ser. No. 399,363

Claims priority, application Japan, Sept. 22, 1972, 47-94595

Int. Cl. F02m *51/00*; **F02d** *5/02*

U.S. Cl. 123—32 EA **5 Claims**



1. An electronic fuel injection control system for an engine, the engine having a fuel injection valve and a synchronizing signal generator to generate an electric synchronizing signal, said control system comprising;

a first sensor to sense a primary operating parameter of the engine and generate an electric primary analog signal analogous thereto;

a second sensor to sense at least one secondary operating parameter of the engine and generate an electric secondary analog signal analogous thereto;

a primary pulse generator responsive to said primary analog signal to generate an electric primary pulse signal having a pulse width analogous thereto;

a secondary pulse generator responsive to said secondary analog signal to generate an electric secondary pulse signal having a pulse width analogous thereto;

a pulse train generator responsive to said primary and secondary pulse signals being operative to alternately generate primary and secondary pulse train signals respectively, said primary pulse train signal having a first number of pulses which is a first predetermined function of the pulse width of said primary pulse signal, and said secondary pulse train signal having a second number of pulses which is a second predetermined function of the pulse width of said secondary pulse signal;

a variable clock pulse generator responsive to said secondary pulse train signal to generate clock pulses at a frequency which is a third predetermined function of said second number of pulses;

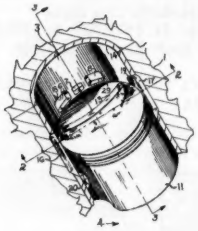
a counter responsive to the synchronizing signal, said primary pulse train signal, and said clock pulses, being operative to count said first number of pulses at the frequency of said clock pulses, the counting operation commencing when said synchronizing signal is received;

and an injection pulse generator connected to said counter and operative to generate an injection pulse signal to open the fuel injection valve for the duration of the counting operation of said counter.

3,858,562
MULTIPLE INPUT PORT INTERNAL COMBUSTION ENGINE

Richard A. Lanpheer, Oshkosh, Wis., assignor to Brunswick Corporation, Chicago, Ill.

Filed Nov. 17, 1972, Ser. No. 307,401
Int. Cl. F02b 25/18, 25/00, 25/14
U.S. Cl. 123—73 A 8 Claims

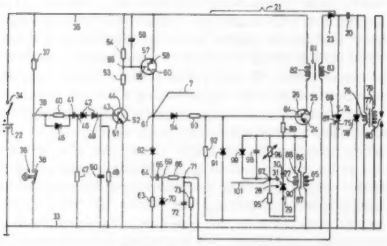


1. In a two-cycle engine generally of the cross-scavenged type having a piston reciprocally mounted within a cylinder, main charge inlet ports and an exhaust port positioned on opposite sides of an imaginary plane vertically bisecting the cylinder, and baffle means extending upwardly of the face of the piston concave to said charge inlet ports and positioned entirely to the inlet side of said reference plane to deflect the inlet gas flow from said charge inlet ports, an improvement comprising auxiliary inlet port means located on the exhaust port side of said baffle means but entirely on the inlet side of said imaginary reference plane each of said auxiliary inlet port means communicating with the crank case of the engine, and being configured to discharge upwardly and radially inwardly of said cylinder so as to introduce additional fuel-air charge behind said baffle means and to the inlet side of said imaginary plane.

3,858,563
ELECTRONIC IGNITION SYSTEM WITH MEANS FOR LIMITING ENGINE SPEED

Helmut Roth, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 7, 1973, Ser. No. 386,378
Claims priority, application Germany, Aug. 17, 1972, 2240475
Int. Cl. F02p 3/06
U.S. Cl. 123—118 22 Claims

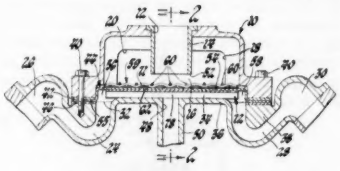


22. In the ignition system of an internal combustion engine, in combination, electrical igniting means operative for igniting a fuel-air mixture in a cylinder of the engine; ignition capacitor means operative for storing the electrical energy required by said igniting means for effecting ignition of said mixture; energy transfer means operative for causing said igniting means to ignite said mixture by transferring to said igniting means electrical energy stored in said ignition capacitor means; ignition-capacitor-charging means connected to said ignition capacitor means and operative for charging the latter; timing means for timing the transfer of energy from said capacitor means to said igniting means; and engine-speed-limiting means including speed-monitoring capacitor means, speed-dependent charging means for charging said speed-monitoring capacitor means by applying thereto substantially identical charging pulses having a pulse repetition frequency proportional to engine speed, discharge means connected to said speed-monitoring capacitor means and operative for discharging said speed-monitoring capacitor means at such a rate that the voltage across the latter can build up to a predetermined value only if the engine speed reaches a predetermined speed, and voltage-responsive means connected to said speed-monitoring capacitor means and operative when the voltage across the latter exceeds said predetermined value for preventing said igniting means from igniting said mixture, wherein said timing means comprises crankshaft coupled means for generating crankshaft-position-synchronized pulses, and differentiating means for converting such crankshaft-position-synchronized pulses into voltage spikes, and wherein said speed-dependent charging means comprises means for charging said speed-monitoring capacitor means by applying thereto charging pulses derived from said voltage spikes.

3,858,564
HEATED MANIFOLD WITH IMPROVED FUEL RETAINER

Paul K. Beatenbough, Medina, and Alan F. Stocker, North Tonawanda, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 31, 1973, Ser. No. 411,229
Int. Cl. F02m 31/00
U.S. Cl. 123—122 AB 3 Claims



1. In a quick heat manifold assembly of the type having a vertical riser bore for supplying an air-fuel mixture from a carburetor to an induction plenum which communicates with manifold runners for supply of air-fuel mixture to engine cylinders and wherein the manifold includes an exhaust heat crossover passage, the improvement comprising: means defining an opening in the manifold between the induction plenum and the crossover passage, a heat exchanger unit including means thereon for sealing the opening between the induction plenum and the exhaust crossover, said unit including a flat sheet metal plate of thermally conductive material located immediately below said induction plenum and including a planar extent extending beyond the cross sectional flow area of the vertical riser bores, a corrugated fin secured to the underside of said plate within said crossover passage to define a plurality of exhaust flow passes across the outer face of said plate, said corrugated fin having a plurality of bends therein having the length thereof in contact with the outer face of said plate, means for bonding said fin bends to the outer side of said plate, a fuel droplet retainer on the inlet side of said plate extending across the full planar extent thereof including a plurality of open cells therein sized to prevent capillary action, each of said cells having sidewall segments thereon in engagement with the inner face of said plate, means bonding at least

70 percent of the engaged segments of said sidewalls to said inner face of said plate to define a limited intercommunication between each of said cells, said sidewall segments blocking direct flow of fuel droplets intercepted on said retainer and restricting flow thereof from the point of contact to the outer perimeter of the plate to reduce accumulation of liquid fuel around the perimeter of said plate, said means for bonding said retainer to said plate having a thermal conductivity greater than that of said plate to cause a reduced temperature differential between said retainer and said plate whereby fuel droplets intercepted by said retainer and plate prior to passage into the engine cylinders are evaporated uniformly upon contact therewith and whereby the retainer and plate will be uniformly heated to prevent cold spots therein on which fuel can be retained by condensation.

3,858,565

INTERNAL COMBUSTION ENGINE AIR INTAKE CONTROL SYSTEMS

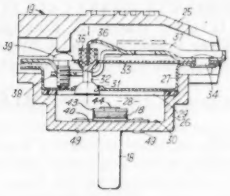
Kenneth Ernest Buckman; Brian Frank Colenutt, and Robin Elgar Datlen, all of Southampton, England, assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 17, 1973, Ser. No. 398,003

Claims priority, application Great Britain, Oct. 6, 1972, 46150/72

Int. Cl. F02m *31/00*

U.S. Cl. 123—122 H **1 Claim**



1. A sensor unit for use in an internal combustion engine having an induction passage for air flow to the engine, a throttle disposed in said induction passage for controlling flow therethrough, said induction passage having a first inlet for receiving ambient temperature air and a second inlet for receiving air warmed to temperatures above ambient temperature, valve means for controlling air flow through said inlets to regulate the temperature of the air flow to said engine, a spring biasing said valve means to permit increased ambient air flow through said first inlet and to decrease warmed air flow through said second inlet, a vacuum motor, and means linking said vacuum motor to said valve means to position said valve means in accordance with variations in pressure sensed by said vacuum motor, said vacuum motor moving said valve means against the bias of said spring to permit increased warmed air flow through said second inlet and to decrease ambient air flow through said first inlet upon a decrease in pressure sensed by said vacuum motor, said sensor unit comprising a body, a closure plate secured to said body to define a chamber therewithin, said body having a first fitting adapted for sensing the pressure in said induction passage downstream of said throttle and a second fitting adapted for connection to said vacuum motor, said closure plate having an air bleed opening for admitting air to said chamber to increase the pressure therein, a bleed valve disposed in and controlling flow through said air bleed opening, means adapted for response to the temperature of induction air flow in said induction passage downstream of said inlets for positioning said bleed valve to permit increased air flow through said air bleed opening upon an increase in said induction air flow temperature and for positioning said bleed valve to decrease air flow through said air bleed opening upon a decrease in said induction air flow temperature, said second fitting having a valve seat formed therein, a pressure responsive non-return valve engageable with said valve seat when the pressure in said first fitting exceeds the pressure in said second fitting to prevent flow from said first fitting through said chamber to said second fitting and disengaged from said valve seat when the pressure in said second fitting exceeds the pressure in said first fitting to permit flow from said second fitting through said chamber to said first fitting, and a temperature responsive member disposed in said chamber and engageable with said non-return valve at temperatures above a selected level to disengage said non-return valve from said valve seat to permit flow through said chamber both from said first fitting to said second fitting and from said second fitting to said first fitting, said temperature responsive member being disengaged from said non-return valve at temperatures below said selected level to permit said non-return valve to engage said valve seat, said second fitting being adjustable relative to said temperature responsive member for varying the selected temperature level above which said temperature responsive member disengages said non-return valve from said valve seat, whereby when the temperature in said chamber is below said selected level said non-return valve permits flow from said vacuum motor to said induction passage and prevents flow from said induction passage and said air bleed opening to said vacuum motor and said vacuum motor positions said valve means to maximize warmed air flow through said second inlet and minimize ambient air flow through said first inlet, and whereby when the temperature in said chamber is above said selected level said temperature responsive member disengages said non-return valve from said valve seat and said vacuum motor senses the pressure created in said chamber by the induction passage pressure sensed through said first fitting and the air flow admitted through said air bleed opening and positions said valve means accordingly.

3,858,566

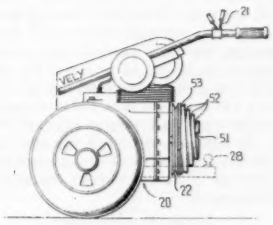
HOUSING AND ATTACHING MEANS FOR ENGINE HAND-STARTING AUXILIARY DEVICE

Donald R. Perry, Manderley Pl., Salem, W. Va. 26426

Continuation-in-part of Ser. No. 197,393, Nov. 10, 1971, Pat. No. 3,716,039, which is a continuation-in-part of Ser. No. 31,620, April 27, 1970, abandoned. This application Feb. 9, 1973, Ser. No. 331,182

Int. Cl. F02n *3/02*

U.S. Cl. 123—185 A **10 Claims**



1. In combination with a beehive-shaped body which is superimposed over a crankshaft and a coaxially attached pulley of a hand-started internal combustion engine as a manual starting means therefor, said pulley having a circumferential groove, an attachment means for attaching said beehive-shaped body directly to said pulley, comprising:

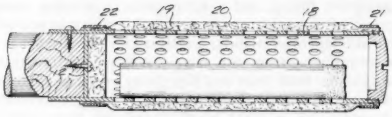
A. a pair of shoes, disposed in mutually opposed relationship and seated within said circumferential groove, and

B. a pair of threadably inserted bolts which push said shoes against the bottom of said circumferential groove and exert an opposing force against said body when said bolts are rotated.

3,858,567
HANDLE WARMER FOR FISHING RODS

Norman D. Slogaski, 1308 24th St., Milwaukee, Wis. 53204

Filed Mar. 26, 1973, Ser. No. 344,991
Int. Cl. A61f 7/06
U.S. Cl. 126—206 3 Claims

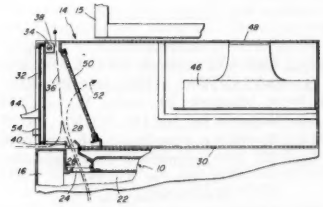


1. In combination with a fish pole, a perforated metal tube engaged over the butt end thereof, a closure on the free end of said tube, said closure comprising a threaded metal closure, fire proofing means lodged within said tube against the butt end of said fish pole, a stick of dry fuel adapted to be ignited and inserted for burning within said tube, a fabric sheath embracing said perforated tube as a hand grip, and an interior coating of fiber glass within said fabric sheath.

3,858,568
OVEN VENT HOOD

Harry W. Seidel, Mertztown, Pa., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 12, 1973, Ser. No. 424,247
Int. Cl. F24c 15/20
U.S. Cl. 126—299 R 2 Claims



1. The combination of an oven, an exhaust hood positioned on top of said oven, and including a housing having parallel transversely extending top and bottom walls and a movable faceplate spanning the space between adjacent ends of said top and bottom walls, a vent in the top of the oven, a lower vent in the bottom wall of the hood behind said faceplate communicating with said oven vent, and an exhaust vent in the top wall of said hood behind and adjacent the faceplate whereby hot air from the oven will rise through the hood behind the faceplate and will exit through said exhaust vent, when said faceplate is closed, without contacting the outer surface of the faceplate.

3,858,569
COFFEE BREWING SYSTEM

Guenter W. Berger, Rowland Heights, Calif., assignor to Farmer Bros. Co., Torrance, Calif.

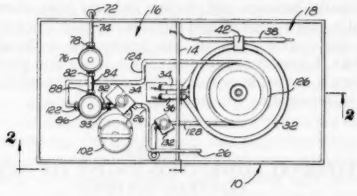
Filed Jan. 26, 1973, Ser. No. 326,738
Int. Cl. F24h 1/20
U.S. Cl. 126—344 5 Claims

1. A coffee brewing system for providing a predetermined amount of water to a heating reservoir comprising:

water pressure regulating means comprising a first water pressure regulator and a second water pressure regulator, said first water pressure regulator having an inlet to which an inlet water line is connected and an outlet connected to an inlet of said second water pressure regulator for providing water at said second water pressure regulator inlet at a first predetermined water pressure level;

control means for allowing said water to flow from said regulating means to said reservoir for a predetermined interval of time and fill said reservoir with a predetermined amount of water;

means for removing heated water from said reservoir each time said reservoir is filled; and

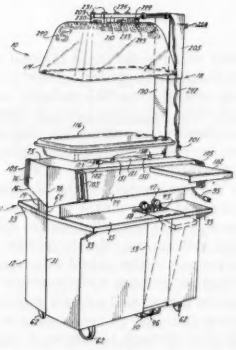


wherein said reservoir contains a first coil for heating said water in said reservoir, a second coil in said reservoir interconnected at one end to a water supply wherein water in said coil is heated, and manually actuatable means for removing heated water in said second coil independent of said water in said reservoir.

3,858,570
COMPREHENSIVE INFANT CARE SYSTEM

John W. Beld, O'Fallon; Warren G. Kinninger, Florissant; Robert E. N. Klohr, Fenton, and Paul A. Byrne, St. Louis, all of Mo., assignors to Puritan-Bennett Corporation, Kansas City, Mo.

Filed June 12, 1972, Ser. No. 261,801
Int. Cl. A61g 11/00
U.S. Cl. 128—1 B 51 Claims



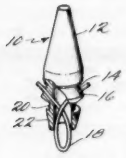
1. An incubator for infants comprising a base on which the infant lies, a dome adapted to fit over the base and to define with the base an environmental chamber for the infant, the dome and base having mating surfaces which engage when the dome is closed, means for moving the dome relative to the base along a defined path between a closed position and an open position relative to the base, means for maintaining an equal distance between said mating surfaces for each dome position, whereby for a given dome position, the mating surfaces are the same distance apart, an infrared heating source for emitting infrared radiation to the infant, and means for mounting said heating source above the base in fixed relation to said dome to emit the same relative distribution of radiation energy over the infant for all positions of the dome relative to

the base, whereby as the dome is moved between closed and opened positions, the relative distribution of radiation energy over the infant from the infrared heating source remains constant.

3,858,571
CORNUAL PLUG

Arthur I. Rudolph, Suite 410, Dadeland Medical Bldg., 7400 N. Kendall Dr., Miami, Fla. 33156

Filed July 2, 1973, Ser. No. 375,609
Int. Cl. A61f *5/46*; **A61m** *29/00*; **A61b** *19/00*
U.S. Cl. 128—1 R **6 Claims**



1. A cornual plug adapted to engage and be retained in the cornual area within the human uterus and formed of an inert material compatible with retention therein, comprising a tapered, plug-shaped device having, at one end thereof a cone-shaped end portion that cooperates with the surrounding uterine tissue as the cornual plug is inserted; a means for retaining the plug in removable contact with said cornual area and the surrounding tissue comprising a cavity within the central portion of said device and opening at the end opposite said cone-shaped portion; at least one anchoring wire contained substantially within said cavity; a plurality of apertures between said cavity and the outside surface of said plug, said apertures providing channels for guiding said anchoring wire from said cavity through the wall of said device, said anchoring wire, in its retracted or insertion position, extending no further than the outside circumference of said plug, and, in its extended or engaging position, extending beyond the outside circumference of said plug, thereby when extended securing and engaging said plug to the surrounding uterine tissue to retain said plug in proper position.

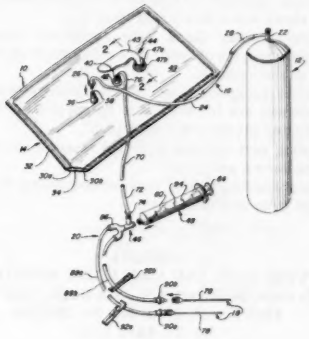
6. A method of temporarily blocking access to the Fallopian tubes of the human female by securing a cornual plug device to the cornual area of the uterus of said female, said method including the steps of:

a. removably attaching a cornual plug device to the distal portion of an insertion tool, said device having a forward cone-shaped tapered section and being provided with anchor wires adjustably extending from the interior portion of said plug to the exterior thereof in a region of said plug spaced from said cone-shaped section;
b. inserting said plug and at least a portion of said insertion tool into said uterus;
c. positioning said plug into one cornual area of said uterus by manipulation of said insertion tool;
d. securing said positioned plug to the surrounding uterine tissue and, at the same time, disengaging said plug from said insertion tool by exerting force against said anchor wires and, in turn, said plug, thereby extending said anchor wires from the interior portion of said plug to the exterior portion thereof and beyond, said anchor wires, disengaging said plug from said insertion tool engaging the adjacent uterine tissue surrounding said plug, thereby attaching said plug to the cornual area of said uterus;
e. removing said insertion tool from the uterus;
f. repeating steps (a) – (c) thereby securing an additional plug of the type described in step (a) to the other cornual area of said uterus.

3,858,572
INSUFFLATION DEVICE

William J. Binard, and John F. Dye, both of Barrington, Ill., assignors to The Kendall Company, Walpole, Mass.

Filed Oct. 27, 1972, Ser. No. 301,564
Int. Cl. A61b *19/00*
U.S. Cl. 128—2 A **1 Claim**



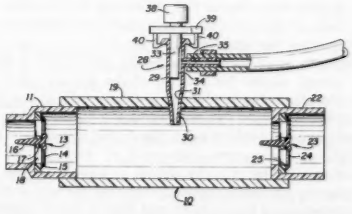
1. A device for use with a source of pressurized gas for insufflating a patient's body, the device comprising

a gas reservoir for retaining a volume of gas at approximately atmospheric pressure, said reservoir formed from a gas impervious flexible material and including an inlet port and an outlet port;
balloon means for automatically releasing gas from said reservoir to the atmosphere when said gas reaches a predetermined pressure, thereby preventing overinflation of said reservoir;
first conduit means communicating with said inlet port and connectable to said source of pressurized gas for the filling of said reservoir;
body penetrating means for introducing gas into the patient's body; and
second conduit means connecting said reservoir outlet port and said body penetrating means and including means for pumping a selected volume of gas from said reservoir to said body penetrating means.

3,858,573
ALVEOLAR GAS TRAP AND METHOD OF USE

Donald F. Ryan, 530 N. Lalonde, Lombard, Ill. 60148, and Allan N. Williams, Griffith, Ind., assignors to said Ryan, by said Williams

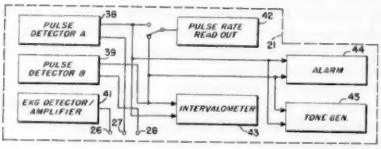
Filed July 9, 1973, Ser. No. 377,758
Int. Cl. A61b *10/00*; **G01n** *1/22*
U.S. Cl. 128—2 C **5 Claims**



1. An alveolar gas trap for obtaining a sample of alveolar gas from a person, comprising

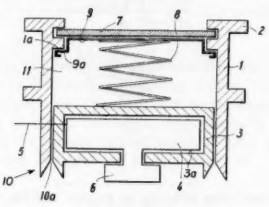
means defining a gas reservoir having a volume equal to no greater than one hundred cubic centimeters,
a mouthpiece for disposition in said person's mouth,
a first one-way check valve mounted in proximity to said mouthpiece and connected between said mouthpiece and said reservoir,
said means defining a gas reservoir being mounted directly to said mouthpiece with said check valve opening directly into said reservoir so that all of the gas passing through said check valve enters said reservoir,
a second one-way check valve connected between said reservoir and the ambient for passing gas from said reservoir to the ambient,
said valves being self biased into a closed position with a sufficiently low force so as to be opened by the normal exhalation pressure of said person,
a sampling port opening into said reservoir between said check valves, and
a valve connected to said port for controlling the removal of gas from said reservoir.

3,858,574
PULSE RATE AND AMPLITUDE MONITOR
Robert E. Page, 3427 Dumas St., San Diego, Calif. 92106
Filed Nov. 3, 1972, Ser. No. 303,560
Int. Cl. A61b *5/02*
U.S. Cl. 128—205 T **10 Claims**



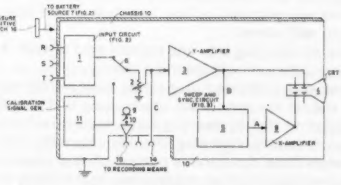
1. A biodynamic instrumentation system comprising:
sensor means including
means providing a source of radiant energy,
an enclosing support means for housing said source of radiant energy on one side thereof and configured to have a channel therein to receive a portion of the anatomy of a living adjacent said source of radiant energy,
transducer means carried by said enclosing support in a position opposite said source of radiant energy on the other side of said channel such as to be occulted by the reception of the portion of anatomy of the living animal for generating an electrical analog signal of the variations in a light signal caused by circulatory variations in the living animal;
first circuit means electrically connected to said sensor means for producing a variable magnitude digital index signal in response to the electrical analog signal;
visual readout means electrically connected to said first circuit means and responsive to the magnitude of the digital index signal for indicating the relative magnitude of the circulatory variations producing the variations of the light signal;
second circuit means electrically connected to said first circuit means for receipt of the digital index signals therefrom for producing a series of digital pulses of a predetermined frequency and of a duration determined by the interval between the digital signal pulses;
logic circuit means connected to said second circuit means to receive the digital pulses therefrom and to develop a count signal in response thereto during predetermined intervals of said digital signal pulses;
register circuit means connected to said logic circuit means for storage of the count developed by said logic circuit means during intervals when said logic circuit is developing the count signal; and
visual display means connected to said register circuit means for indicating a time related function of the variations in the circulatory system of the animal in response to the count stored in said register circuit means.

3,858,575
BODY NOISE DETECTOR
Ewald Rose, August-Antz-Strasse 25, 55 Trier-Ehrang, Germany
Filed May 24, 1973, Ser. No. 363,582
Claims priority, application Germany, Mar. 5, 1973, 2310953
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 S **4 Claims**



1. A body noise detector comprising a housing enclosing an underpressure chamber, said housing including a rigid wall portion and a deformable wall portion, an annular ring projecting from the housing and forming a contact surface engageable with a patient's body, said annular ring having a passage therethrough communicating between the contact surface and the underpressure chamber, said annular ring defining a cavity, microphone means carried by said housing and disposed in said cavity for engagement with a patient's body, means for transmitting the noise detected by the microphone means, a pressure plate within said underpressure chamber and engageable with said deformable wall and spring means connected between said rigid housing wall and said pressure plate for urging said deformable wall into substantially undeformed condition by said pressure plate.

3,858,576
PORTABLE ELECTROCARDIOSCOPE
Heinz Dehnert, Freiburg, and Hermann Steiert, Buchheim, both of Germany, assignors to Hugo Sachs Elektronik Kommanditgesellschaft, Am Bahnhof, Hugstetten, Germany
Filed May 23, 1973, Ser. No. 362,973
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **11 Claims**



1. An electrocardioscope comprising a plurality of input terminals adapted to receive cardiac signals representing the cardiac action of a patient, display means, and a control circuit disposed between said terminals and said display means for processing said cardiac signals to produce output signals which are coupled to said display means to produce a visual

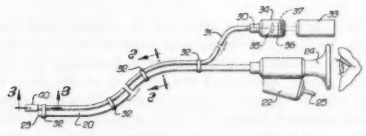
representation of said cardiac action, said control circuit comprising means connected across a pair of said terminals and responsive to said received cardiac signals for producing an input signal, a first pair of diodes connected in series with one another across said pair of terminals, a second pair of diodes connected in series with one another and in parallel with said first pair of diodes, said first pair of diodes being poled oppositely to said second pair of diodes, means coupling said input signal across said parallel-connected pairs of diodes, a differential amplifier comprising first and second interconnected transistors, capacitor means coupling the opposing ends of said parallel-connected diode pairs to said first and second transistors respectively, means connecting the mid-junction of said first pair of diodes to the mid-junction of said second pair of diodes, further capacitor means coupling the interconnected mid-junctions of said pairs of diodes to said first and second transistors respectively, means defining a point of reference potential, a pair of oppositely poled zener diodes connected in series with one another between the interconnected mid-junctions of said diode pairs and said point of reference potential, and output means coupling the output of said differential amplifier to said display means.

3,858,577

FIBER OPTIC LASER LIGHT DELIVERY SYSTEM

Michael Bass, Pacific Palisades; Richard M. Dwyer, Glendale, and Bernard J. Haverback, North Hollywood, all of Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed Apr. 5, 1974, Ser. No. 458,131
Int. Cl. A61b *1/06*
U.S. Cl. 128—8 **15 Claims**



1. In an instrument for simultaneously viewing an internal surface of a body cavity and performing a surgical procedure on the surface from an external position, the combination of:

a flexible endoscope having at least one bundle of fiber optic fibers and a distal end and a proximal end;

another separate fiber optic fiber carried by said endoscope;

a laser for generating an output beam; and

coupling optics for coupling the laser output beam to the interior of said other fiber adjacent the proximal end of said endoscope, with said other fiber terminating at the distal end of said endoscope.

3,858,578

SURGICAL RETAINING DEVICE

Simcha Milo, Haifa, Israel, assignor to Pravel, Wilson & Matthews, Houston, Tex., a part interest

Filed Jan. 21, 1974, Ser. No. 435,235
Int. Cl. A61b *17/02*
U.S. Cl. 128—20 **9 Claims**

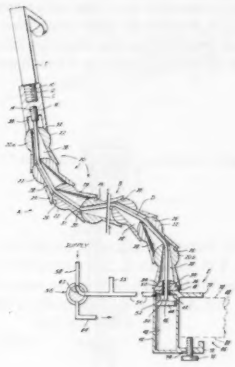
1. A surgical retaining device for holding a surgical instrument in place, comprising:

a base having a bore therethrough;

a surgical instrument connector adapted to be attached at its top portion to a surgical instrument;

a plurality of arm members, each having a bore therethrough, an arcuate head portion, and a conical tail portion with an arcuate annular surface to receive the head portion of another arm member, said arm members being positioned head to tail between the connector and the base and with adjacent members pivotable with respect to each other; and

a flexible cable affixed at its first end to the bottom portion of the connector and extending through the bores of the



arm members and base whereby exerting a force on a second end of said cable holds the arm members rigidly together and the surgical instrument in place.

3,858,579

HUMAN BODY MASSAGING APPARATUS

James F. Ching, 2938 Pale Hwy., Honolulu, Hawaii 96817

Filed Aug. 23, 1973, Ser. No. 390,774
Int. Cl. A61h *15/00*
U.S. Cl. 128—57 **7 Claims**

1. A human body massaging apparatus comprising a human body contacting inflexible, cylindrical roller element, having a smooth elongated inflexible and rigid cylindrical outer surface, and having left and right circular faces rectangularly oriented at longitudinal ends of the cylindrical outer surface, left and right handgrips rotatably mounted at left and right circular faces of the cylindrical roller element, respectively, so that the cylindrical roller element is free to rotate about its principal axis of rotation when the left and right handgrips are held stationary, whereby the human body is massaged by grasping the handgrips and rolling the cylindrical roller element over the human body.

3,858,580

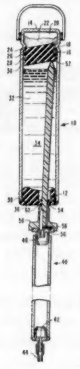
INTRAVENOUS CONTAINER MIXING ASSEMBLY

Robert W. Ogle, Newport Beach, Calif., assignor to IMS Limited, Wilmington, Del.

Continuation-in-part of Ser. No. 195,886, Nov. 4, 1971, , which is a division of Ser. No. 830,311, June 4, 1969, Pat. No. 3,674,028. This application Nov. 1, 1972, Ser. No. 302,783
Int. Cl. A61m *5/16*
U.S. Cl. 128—214 C **9 Claims**

1. A novel device for the administration of intravenous fluids which comprises a cylindrical fluid container having an open end and a closed end, an imperforate stopper in said open end, an annular inwardly projecting ring within said container, a tippable center septum abutting said ring, a non-opaque drip meter having a fluid outlet at one end and a fluid

inlet, said inlet comprising a tubular member terminating within said drip meter whereby drops can be visually observed at the end of said tubular member through said drip meter, extending from said drip meter an elongated rigid spike having an enlarged base adjacent said drip meter, said spike terminating in a point at its other end, said other end extending into said container, a filtered air inlet positioned in proximity to the base of said spike, means for admitting filtered air into said container, a fluid passage running through said base and having one end adjacent the spike at the exterior of said base so that essentially all of the fluid within said container can drain out by gravity through said fluid passage, and the other end of said fluid passage communicating with said tubular member, the point of said spike being adapted to puncture said stopper and tip said septum whereby contents of said container can be mixed without contamination from the exterior and the fluid contents can flow through said fluid passage and drip meter while filtered air passes into said vial.



3,858,581

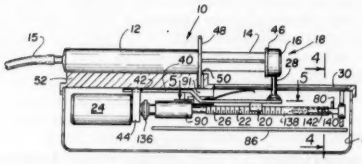
MEDICATION INJECTION DEVICE

Dean Kamen, 99 Bulsar Rd., Rockville Centre, N.Y. 11570

Filed July 2, 1973, Ser. No. 375,955

Int. Cl. A61m *5/20*

U.S. Cl. 128—218 A **5 Claims**



1. A medication injection device comprising a syringe for dispensing medication in accordance with linear displacement of a plunger thereof, means secured to said syringe for connection to a patient for dispensing said medication to said patient, a rotatively mounted lead screw with threads of uniform pitch disposed in substantially parallel relation to the linear displacement path of said syringer plunger, pushing means mounted on said lead screw for advancement therealong in pushing engagement with said syringe plunger, a motor operatively arranged to power said lead screw in rotation to cause advancement of said pushing means and corresponding linear displacement of said syringe plunger, a radially oriented striker mounted on said lead screw, a pulse-emitting switch located adjacent said lead screw in the path of the rotational traverse of said striker so as to be engaged thereby to cause an emission of an electrical pulse during each rotation of said lead screw, and a pulse-counting means electrically connected to receive the transmission of each aforesaid pulse and operatively connected to permit the operation of said motor for the duration of the transmission thereto of a selected number of said ppulses, whereby medication is dispensed in accordance with the linear displacement of said syringe plunger as a function of the number of rotational traverses of said lead screw as counted by said pulse-counting means.

3,858,582

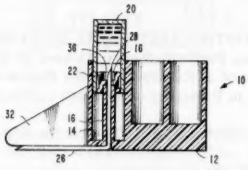
CARTRIDGE VACCINE INJECTOR

Robert Walter Ogle, Newport Beach, Calif., assignor to IMS Limited, Wilmington, Del.

Filed Dec. 13, 1972, Ser. No. 314,706

Int. Cl. A61m *5/24*

U.S. Cl. 128—220 **6 Claims**



1. An injector for the injection of vaccines and the like beneath the layers of the skin or between layers of the skin comprising a base member having a generally flat bottom surface adapted to contact the surfaces of the skin, and a hollow tubular portion extending upwardly with respect to said base member, said hollow tubular portion having received therein a rigid medicament vial, said vial having an open end and a closed end, an imperforate stopper in said open end, said open end facing the bottom of said tubular portion, a thrust portion extending from said base member upwardly within and centrally located in said tubular portion, a hollow needle extending upwardly in said thrust portion, the upwardly portion of said needle having a sharpened end adapted to puncture said stopper, said needle containing an obtuse or right angle bend and terminating with a second sharpened end at or just below that plane defined by said bottom surface of said base member so that when said vial is depressed in said tubular portion, fluid communication is established between the interior of said vial and said second sharpened end.

3,858,583

MEDICAMENT INHALATION DEVICE

Gerald Wynn Hallworth, and Sidney William Smith, both of London, England, assignors to Allen & Hansburys Limited, London, England

Filed Jan. 28, 1974, Ser. No. 436,993

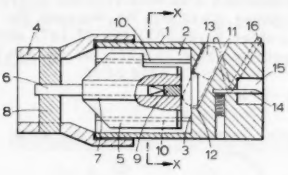
Claims priority, application Great Britain, Feb. 26, 1973, 9246/73

Int. Cl. A61m *13/00, 15/06*

U.S. Cl. 128—266 **5 Claims**

1. A medicament inhalation device comprising a body with a dispersion chamber therein, a rotor mounted in one end of said chamber and which is rotatable in the chamber by passage of air there through, at least one air inlet aperture in the body, the said apertures opening into the chamber around the rotor, a mouthpiece on one end of the body through which air from the chamber can be inhaled, and a capsule-retaining pocket in and adjacent the other end of said body and in proximinity to said rotor's other end to receive a pierced

medicament containing capsule and opening into the chamber, a means for providing vibration and passage of medicament from said capsule comprising a capsule contacting

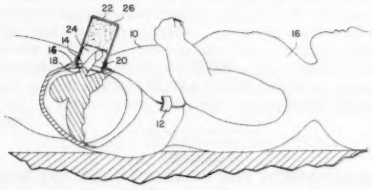


means on the other end of said rotor whereby inhalation of air through the mouthpiece will turn said rotor to vibrate and draw medicament from the capsule through the chamber and out through the mouthpiece into the patient.

3,858,584
DIAPER FOR MALE BABY

Anna M. Johnson, Willoughby, Ohio, assignor to The Raymond Lee Organization, New York, N.Y., a part interest

Filed Mar. 11, 1974, Ser. No. 449,632
Int. Cl. A61f *5/44, 13/18*
U.S. Cl. 128—286 **2 Claims**



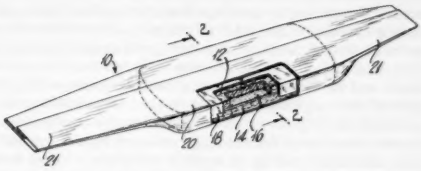
1. A diaper device for a male baby comprising:
a soft flexible diaper having a central opening in one half portion thereof adjacent the middle which when the diaper is in place receives the male member;
a means for preventing chafing of the male member comprising a soft flexible net extending through the opening, secured to the perimeter of the opening in the diaper and disposed between the male member and the diaper; and
a means for collecting urine for subsequent disposal including impervious disposable urine container having absorbent material in one end and detachably secured at the other end to the diaper in the region of the opening and located to receive the net and said member.

3,858,585
FLUID ABSORPTION AND RETENTION PRODUCTS AND METHODS OF MAKING THE SAME

Pronoy Kumar Chatterjee, Spotswood, N.J., assignor to Personal Products Company, Milltown, N.J.

Continuation-in-part of Ser. No. 126,743, March 22, 1971, Pat. No. 3,731,686, which is a continuation-in-part of Ser. No. 797,791, Feb. 10, 1969, abandoned. This application Jan. 15, 1973, Ser. No. 323,598
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 R **6 Claims**

1. In an absorbent dressing including an uncompressed body comprised of absorbent fibers of an alkali metal salt of carboxyalkyl cellulose having an average degree of substitution greater than about 0.35 carboxyalkyl radicals per anhydroglucose residue in the cellulose, the improvement wherein said fibers have crosslinkages, said crosslinkages consisting of adjacent chains of repeating anhydrglucose units linked di-



rectly to each other by heat treating without the use of crosslinking agents.

3,858,586
SURGICAL METHOD AND ELECTRODE THEREFOR

Martin Lessen, 9 Idlewood Rd., Rochester, N.Y. 14618

Continuation-in-part of Ser. No. 123,194, March 11, 1971, abandoned. This application June 1, 1973, Ser. No. 366,011
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.1 **7 Claims**

1. A method of sterilization of a female human being, comprising guiding a source of electric discharge under direct vision to the fallopian tubes of said female, generating a cauterizing electric discharge essentially completely, within the fallopian tubes removed from the uterus proper and allowing interior scar tissue to form, thus sealing said tubes.

3,858,587
MAGNA-TIP

Anthony R. Cavelli, Port Jefferson Station, and George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, both of N.Y. 10007

Filed Feb. 5, 1974, Ser. No. 440,087
Int. Cl. A24d *1/08*
U.S. Cl. 131—7 **3 Claims**

1. In an improved filter cigarette the combination of a rolled up paper containing tobacco for burning in one end thereof,

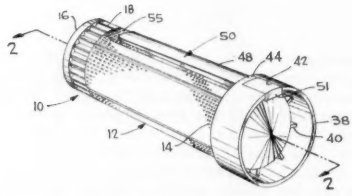
said tobacco extending a major length of said paper, and means within the other end of said paper which provides a pure tobacco flavor instead of a strawlike or plastic taste, said means comprising a cartridge having a rolled filter paper having charcoal in one end, a filter at its center and tobacco in its other end, said cartridge being positioned in said cigarette end with said charcoal being adjacent the first said tobacco and the tobacco end of said cartridge being at the outer end of said cigarette, wherein means are provided for a smoker to distinguish which end of said cigarette to ignite, said means comprises a diametrically enlarged lip on one end of said cartridge, said lip extending outwardly of said rolled paper, said cartridge being slidably fitted in said rolled paper, whereby said cartridge may be pulled by said lip a selected distance outwardly of said paper and a string attached to another end of said cartridge and extending therefrom into the first said tobacco, said string having knots along its length so that when the string is pulled by said outwardly sliding cartridge the first said tobacco incorporates a less dense portion at its rear end than at its front end.

3,858,588

HAIR ROLLER

Henry J. Walter, Wilton, and Roy White, Norwalk, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,023
Int. Cl. A45d *2/12*
U.S. Cl. 132—33 R **5 Claims**



1. A heatable hair roller comprising

a tubular body having a substantially smooth outer surface, a closed end including an end wall and stop means spaced therefrom including a support block having recessed shoulders, an open end and a heating cartridge inserted in said open end of said tubular body and having an end abutting said stop means to define a space between said end of said heating cartridge and said end wall whereby said space thermally insulates said closed end of said tubular body from said heating cartridge;

a collar disposed around one end of said tubular body and extending radially therefrom and having a notch formed therein and a bridge portion aligned with said notch;

a plurality of spokes circumferentially spaced around said closed end of said tubular body and radially extending from said closed end of said tubular body to said collar to space said collar from said tubular body;

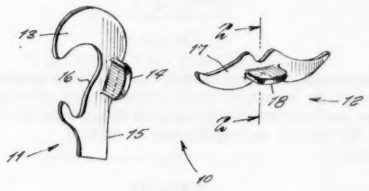
an elongate clip member extending longitudinally along said tubular body to contact a portion of said outer surface having a head, an arm extending along said outer surface of said tubular body and a reduced cross-section portion defining a channel joining said arm and said head portion, said head of said clip member being received in said notch in said collar and said bridge portion of said collar being received in said channel in said clip member; and a support means for pivotally mounting said clip member on said tubular body at said collar and biasing said clip member against said portion of said outer surface of said tubular body including a spring member having a flat member bent to form a first leg defining a first portion engaging said clip member and a second leg defining a second portion being clamped between said support block and said end of said heating cartridge and supported by said recessed shoulders.

3,858,589

E-Z SIDEBURN AND MOUSTACHE SHAPER

Catherine E. Geiger, 87-14 55th Rd., Norcross, Ga. 11373

Continuation of Ser. No. 212,022, Dec. 27, 1971, abandoned.
This application Mar. 13, 1973, Ser. No. 340,702
Int. Cl. A45d *24/36*
U.S. Cl. 132—45 R **2 Claims**



1. A barbering implement for trimming a person's sideburns comprising a template having a sideburn outline portion that conforms to the front and the bottom edges and the length of a desired sideburn shape, and an ear encircling portion having a top curved section for resting on top of an ear and projecting downwardly behind the ear and a bottom section for encircling the ear lobe and projecting upwardly towards said top curved section, the two said sections being spaced from each other to provide a generally C-shaped opening which opens rearwardly relative to said sideburn outline portion, whereby when the sideburn outline portion is placed over a sideburn to be trimmed, the ear encircling portion encircles the top, front, and ear lobe of a person's ear.

3,858,590

HEAD ORNAMENT FOR WEARING OVER THE HAIR

Anna Elizabeth Lowery, 308 Lincoln Ave., Lexington, Ky. 40502

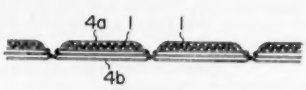
Filed Aug. 15, 1973, Ser. No. 388,471
Int. Cl. A45d *8/00*
U.S. Cl. 132—46 R **3 Claims**

1. An ornament adapted for wear upon the head in overlying relation to the hair and comprising, a resilient arcuate first member with ends terminating adjacent the ears of the head of the wearer, a rearwardly extending laterally secured arcuate second member affixed by hinges at its forward end to said first member centrally thereof adjacent the top of the head and with its rearward end terminating adjacent the nape of the neck, said second member comprising a wire shaped to rest upon the top and back of the head and extending from a narrow portion at the nape of the neck to a wider portion at its juncture with said first member, and ornamentation affixed to each of said members and disposed above the hair of the wearer, said ornamentation serving to hide from view the mechanical structure of each of said members.

3,858,591
HAIR-PIECE FOR A HAIR WIG HAVING AN ALL DIRECTIONAL CONTRACTILITY AND ITS PROCESSING METHOD FOR THE SAME

Yukio Wada, Tokyo, Japan, assignor to Ryowa & Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1973, Ser. No. 418,765
Int. Cl. A41g 3/00
U.S. Cl. 132—53 2 Claims

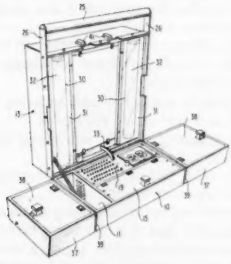


1. In a process of making a hair-portion for a hair-wig having multi-directional contractility, the sequence of steps are:
a. providing a machine sewing of two lines of stitches transversely along the center of a plurality of bundles of hairs to form an intermediate workpiece;
b. second, folding said intermediate workpiece in two rows at the central part which rows are then provided with two lines of machine sewn stitches thereon; and
c. third, further folding said intermediate workpiece so as to be turned back over said bundles which have been machine sewn, the lower threads in each of the processing being spirally stitched by means of a looper, said lower threads being spirally stitched while said threads are stretched in the lengthwise direction to provide contractility thereto and the intermediate workpiece being tensioned in the third step so that all directional contractility is provided to the finished article.

3,858,592
TRAVEL MAKE-UP CASE

Sidney E. Rickenbaker, P.O. Box 1921, Myrtle Beach, S.C. 29577

Filed Sept. 17, 1973, Ser. No. 397,911
Int. Cl. A45d 40/00
U.S. Cl. 132—79 5 Claims

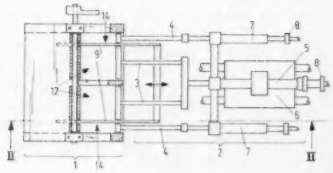


1. A travel make-up case or the like comprising a rectangular body portion having a storage compartment for electrical components and having additional utility compartment means, said body portion adapted to rest horizontally during use when the case is open, a pair of equal size auxiliary box compartments hinged to the two forward corners of the rectangular body portion and being of equal depth with the body portion and adapted to lie in a common horizontal plane with the body portion when the case is open for use, the axes of the hinges connecting the auxiliary box compartments with the body portion then being vertical and the auxiliary box compartments being swingable in said horizontal plane to side-by-side substantially abutting positions forwardly of the body portion and to alternate use positions at the opposite sides of the body portion substantially abutting said opposite sides, the two auxiliary box compartments when in the first-named use position extending forwardly of said body portion for a distance substantially equal to the front-to-back depth of the body portion and also extending across the full frontal width of the body portion, the auxiliary box compartments when in the second-named use position extending outwardly of the opposite sides of the body portion equidistantly and also extending for the entire front-to-back depth of the body portion and approximately doubling the lateral width of the body portion in said second use position, and a unitary rectangular cover for the case hinged to the rear upper corner of the body portion by a horizontal axis hinge and being vertically swingable from an upright use position to a down horizontal case closing position, said cover containing illuminated mirror means electrically coupled with said electrical components in said compartment means of the body portion, said rectangular cover adapted to overlie and cover the body portion and said auxiliary box compartments when the latter are positioned in the first use position immediately forwardly of the body portion, said cooperating latch means for the case on the cover and on the two auxiliary box compartments whereby the case is rigidly held closed and the auxiliary box compartments are rigidly held in said first use position ahead of said body portion, the closed case being box-like and rectangular.

3,858,593
METHOD OF FELTING TWO TOBACCO FILLERS IN A CIGAR OR CIGAR ROD

Henrious Johannes Maas, Eindhoven, Netherlands, assignor to Arenco-P.M.B. N.V., Best, Netherlands

Continuation of Ser. No. 217,445, Jan. 13, 1972, abandoned. This application Jan. 11, 1974, Ser. No. 432,523
Claims priority, application Netherlands, Jan. 8, 1971, 7100272
Int. Cl. A24c 01/02, 01/24
U.S. Cl. 131—81 A 8 Claims



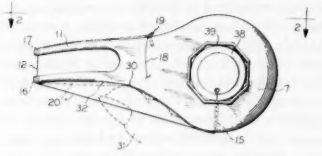
1. In a cigar making machine, in combination:
an elongate press well structure having a space at one end thereof for accumulating packed cigar material;
cutter means associated with said space for cutting off packed cigar material accumulated therein;
first supply means communicating with said well for discharging smoking tobacco material into a first longitudinally extending zone of said well;
second supply means communicating with said well for discharging mouth part filler material into a second longitudinally extending zone of said well, said first and second longitudinally extending zones being side-by-side and each leading to said space whereat packed cigar material is accumulated;
punch means movable in said zones for selectively feeding said materials continuously and at the same time from both of said zones into said space continuously to interfelt said materials as they are continuously fed together; and
partition wall means for separating said zones longitudinally thereof to selected points relative to said one end of the press well structure selectively to control felting of said smoking tobacco material and said mouth part filler material as they are accumulated in said space.

3,858,594

HOLDER FOR USING AND TENSIONING DENTAL FLOSS

George Ensminger, 2041 Fieldcrest Dr., Owensboro, Ky. 42301

Filed May 30, 1973, Ser. No. 365,282
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 A 3 Claims



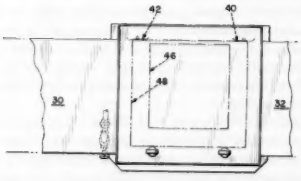
1. A dental floss holder comprising in combination, a body holding a supply of dental floss shaped to be held in a users hand and defining a generally radial feed aperture therethrough from which the floss is taken from the supply, a pair of forked tines extending from the body and spaced apart to receive a working length of floss therebetween at the terminal end thereof remote from said body, said tines each defining near the terminal end a feed aperture for threading the floss therethrough and confining movement of said working length in a radial direction toward or away from the body, an anchor member positioned to retain the loose end of the floss when extended from a second of said tines from said supply after passing through said feed apertures, indented bow shaped structure between said radial feed aperture outlet from said body and the feed aperture in a first of said tines holding the floss spanned in position therebetween and extending toward said supply with the floss spanning said bow, and a frictional surface on said bow shaped structure positioned to receive said spanned floss thereupon so that in use as normally held in the hand a finger may press the floss toward said bow shaped structure and into contact with said frictional surface to increase the floss path length between said radial feed aperture and said feed aperture on the first said tine and thereby the tautness of said floss length between said tines to hold the floss working length between said tines in tension pulling against said anchor as said tines are manipulated into position to insert the floss between teeth and to maintain the floss span between the tines tight by finger pressure while scrubbing the teeth with said floss.

3,858,595

UTENSIL WASHING APPARATUS

Harry D. Schultz, and Harold H. Lund, both of Winston-Salem, N.C., assignors to Champion Industries, Inc., Winston-Salem, N.C.

Filed Jan. 19, 1973, Ser. No. 325,151
Int. Cl. B08b *3/02*
U.S. Cl. 134—47 9 Claims



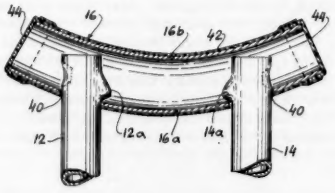
1. A utensil washer for cleaning racks of dishes as well as racks of pots and pans comprising; a housing defining a utensil cleaning chamber, said chamber adapted to receive either a utensil rack of a first type for cleaning dishes or a utensil rack of a second type for cleaning pots and pans, spraying mechanism within said chamber adapted to have cleaning fluid conducted therethrough from a supply source, variable fluid pressure means for directing the cleaning fluid through said spraying mechanism into said chamber at a first prescribed pressure when a dish rack of a first type is within said chamber and at a second prescribed pressure when a pot and pan rack of a second type is within said chamber, and means, including, rack contacting sensor means, for automatically determining the type of rack within said chamber and adjusting said fluid pressure means to direct cleaning fluid through said spraying mechanism at a prescribed pressure corresponding to the type of rack within said chamber.

3,858,596

UNDERARM CRUTCH

Morton I. Thomas, Monroe, N.Y., assignor to Temco Products Inc., Passaic, N.J.

Filed July 13, 1973, Ser. No. 379,055
Int. Cl. A61h *3/02*
U.S. Cl. 135—50 2 Claims



1. An underarm crutch comprising:

a. a pair of side frame members spaced from each other at their upper ends and converging toward each other at their lower ends;

b. an underarm support mounted on said upper ends of said side frame members;

c. means securing said underarm support to said side frame members but allowing said side frame members to move angularly relative to each other;

d. a center leg element mounted between said converging lower ends of said side frame members and extending downwardly therefrom;

e. means adjustably and detachably securing said center leg element to said side frame members;

f. a handgrip mounted on said side frame members above their converging lower ends; and

g. means adjustably and detachably securing said handgrip to said side frame members,

h. said underarm support comprising a tubular member,

i. said tubular underarm member being downwardly curved along its longitudinal axis to define a concavely curved upper wall and a convexly curved lower wall,

j. said concavely curved upper wall defining an underarm saddle,

k. a pair of holes being formed in the convexly curved lower wall of the tubular underarm member,

l. the upper ends of the side frame members projecting into said tubular underarm member through said holes,

m. means attaching said upper ends of the side frame members to said tubular underarm member,

n. said side frame members being formed of malleable metal tubing,

o. those portions of the upper ends of the side frame members which project into said tubular underarm member being transversely deformed to enlarge their cross-sectional dimensions to the extent necessary to prevent separation of said tubular underarm member from said side frame members,

p. sufficient clearance being provided for the upper ends of the side frame members in their respective holes in the tubular underarm member to enable said side frame members to engage in relative angular movement toward and away from each other and into and out of engagement with the handgrip when their converging lower ends are detached from the center leg element,

q. said handgrip being provided with a pair of supporting pins extending from opposite ends thereof in coaxial relationship, and

r. said side frame members being provided with a plurality of opposed, horizontally aligned holes formed therein to engage said handgrip pins, and thereby to attach the handgrip to the side frame members,

s. each of said side frame members being provided with a plurality of such holes spaced vertically therein and registering horizontally with the corresponding holes of the other of said side frame members in facing relationship,

t. said side frame members being angularly movable away from each other, when detached from the center leg element, to disengage the handgrip pins from one pair of horizontally registering holes,

u. said side frame members being angularly movable toward each other for reattachment to said center leg element and for engagement of said handgrip pins with another pair of horizontally registering holes,

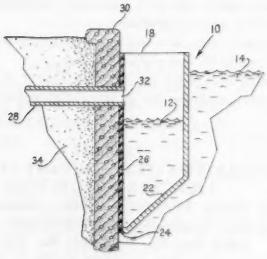
v. whereby the handgrip pins are selectively engageable with said horizontally registering holes for height-adjustment of said handgrip.

3,858,597

METHOD AND APPARATUS FOR DRAINING LIQUID CARRYING DUCTS WHICH TRANSPORT LIQUID TO AND FROM LIQUID HOLDING CONTAINERS

George M. Pramenko, 521 University Ave., Missoula, Mont. 59801

Filed Dec. 28, 1973, Ser. No. 429,275
Int. Cl. E04h *3/16*
U.S. Cl. 137—1 **6 Claims**



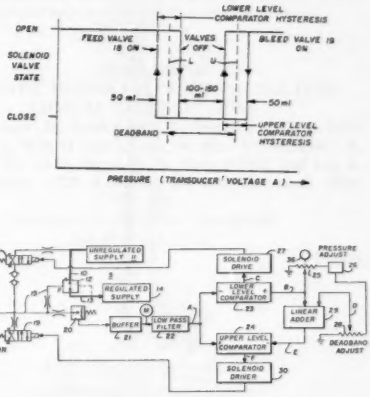
1. The method of draining a liquid carrying duct which communicates with a container confining a main body of liquid in a way to permit drainage of the said duct without materially reducing the level of said main body of liquid including the steps of inserting an isolating means in said main body of liquid around a duct to be drained thereby isolating a body of liquid around the said duct from the main body of liquid, removing the liquid in the said isolated area to a level below the said duct and draining the liquid from the said duct, sealing the said duct and removing said isolating means thereby allowing said main body of water to seek its level relative to the said duct.

3,858,598

PRESSURE CONTROL APPARATUS

Richard J. Carman, Houston, and Paul R. Benson, Spring, both of Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Division of Ser. No. 206,481, Dec. 9, 1971, Pat. No. 3,726,307.
This application Mar. 27, 1973, Ser. No. 345,431
Int. Cl. G05d *11/00*; **F16k** *31/02*
U.S. Cl. 137—102 **4 Claims**



1. Apparatus for controlling from above sea the pressure of hydraulic fluid utilized to operate a subsea blowout preventer, comprising, in combination: a source of such hydraulic fluid; fluid conducting means adapted to be connected to such a blowout preventer to conduct said hydraulic fluid thereto; pilot pressure controlled regulator means adapted to be connected to regulate the pressure of said hydraulic fluid in response to the pressure of a pilot fluid; means for providing such a pilot fluid to said regulator means; first solenoid means connected to said regulator means to cause an increase in the pressure of said pilot fluid in response to a first electrical control signal; second solenoid means connected to said regulator means to cause a decrease in the pressure of said pilot fluid in response to a second electrical control signal; transducer means adapted to be connected to provide a transducer electrical signal responsive to a fluid pressure associated with the pressure of said pilot fluid; electronic comparator means adapted to be responsive to said transducer electrical signal when different from a reference electrical signal by a first pre-selected amount to provide said first electrical control signal, and responsive to said transducer electrical signal when different from such a reference electrical signal by a second pre-selected amount to provide said second electrical control signal, and remote control means adapted to be located at a central location remote from said blowout preventor to provide a reference electrical signal to said electronic comparator means substantially proportional to a pressure of said pilot fluid to be maintained.

3,858,599

SANITARY FROSTPROOF HYDRANT

Donald E. Carlson, Highland Park, Ill., assignor to Mark Controls Corporation, Evanston, Ill.

Filed Oct. 16, 1973, Ser. No. 406,911
Int. Cl. E03c *1/10*; **E03b** *9/14*
U.S. Cl. 137—218 **14 Claims**

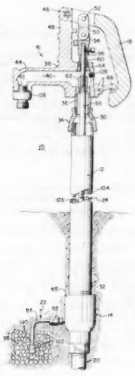
1. A hydrant for controlling the flow of water from an underground supply comprising:

casing means having a lower portion adapted to extend below the frost line and an upper portion adapted to be located above ground;

valve means for controlling the entry of water from the supply into said casing means;

head means connected to said upper portion for the delivery of water from said casing;

handle means supported by said head means and coupled to said valve means for opening and closing said valve means;



and the improvement comprising:

conduit means for draining said casing means and having an inlet in the lower portion of said casing means;

said conduit means having an outlet adapted to be located outside of said casing means; and

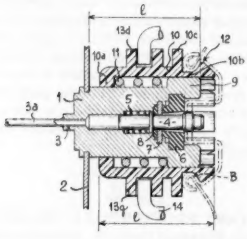
check valve means in said conduit means for permitting flow from the inlet to the outlet and for preventing flow from the outlet to the inlet.

3,858,600

CONNECTION APPARATUS FOR FITTING TO THE FRAME OF A CAMPING GAS STOVE

Claude Appolos, Aubervilliers, France, assignor to Antargaz Societe Anonyme de Distribution de Gaz Liquides de Petrole, Paris, France

Filed Mar. 29, 1973, Ser. No. 346,096
Int. Cl. F16k *31/44*
U.S. Cl. 137—322 **7 Claims**



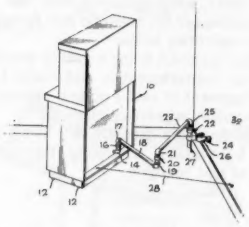
1. Apparatus for connecting a gas supplying pipe of a stove burner to a pressurized liquid gas containing cartridge having a mouth bead, comprising: a casing for attachment to a frame element of a stove, said casing including means for tapping gas from the cartridge; locking ring means fixedly mounted to a frontal free end of said casing; a sleeve mounted in sliding arrangement over said casing; a series of radial resilient grippers integrally mounted to one end of said sleeve adjacent said frontal free end of said casing; and engagement means for bringing said grippers frontwardly of said locking ring means in a position of engagement with the mouth bead of a cartridge, whereby said resilient grippers may be radially flexed to engage the mouth bead, and for successively ensuring a locking engagement of said grippers with the bead whereby said grippers are slid over said locking ring means.

3,858,601

MOVABLE APPLIANCE ASSEMBLY AND GAS CUT-OFF VALVE

Chester B. Ensinger, Mobile, Ala., assignor to Roto-Swivel Corporation, Inc., Burbank, Calif.

Filed Feb. 1, 1973, Ser. No. 328,716
Int. Cl. F16l *35/00*
U.S. Cl. 137—374 **5 Claims**



1. An extendible gas service connector for connecting a gas-operated appliance with a gas main pipeline, said appliance being supported by roller means for rendering the appliance freely movable, said extendible gas service connector including:

a pair of rigid pipelines;

a first freely rotatable (rotatable/angular) uiversal coupling at one end of said pipelines said coupling providing for free independent 360° rotation about the longitudinal axis of said coupling;

a second freely rotatable universal coupling at one end of the other of said pipelines;

a third freely rotatable universal coupling intercoupling the other ends of said pipelines; and

restraining means for limiting movement of said extendible gas service connector in three dimensions.

3,858,602

AIR OPERATED SAFETY SHUT-OFF SYSTEM FOR LIQUID RESERVOIR FEED

Stanley J. Brym, Torrington, Conn., assignor to Baldwin-Gegenheimer Corporation, Stamford Conn.

Filed June 15, 1973, Ser. No. 370,316
Int. Cl. F16k *31/28*
U.S. Cl. 137—423 **9 Claims**

1. Apparatus for interrupting the flow of liquid to a liquid receptacle when a dangerously high level is reached in the liquid receptacle comprising:

a liquid inlet line to deliver liquid to the liquid receptacle;

a valve at the terminus of the liquid inlet line;

means for automatically closing the valve at the terminus of the liquid inlet line when the liquid in the liquid receptacle reaches the predetermined desired level and for automatically opening the valve at the terminus of the liquid inlet line when the liquid level falls below the predetermined desired level;

a normally closed air operated valve in the liquid inlet line, which valve assumes an open position when subjected to air pressure;

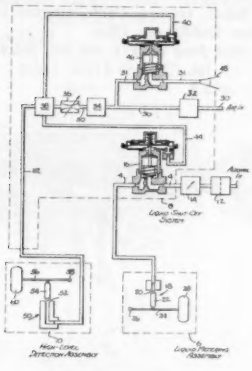
an air inlet line to deliver air to the normally closed valve in the liquid inlet line to maintain said valve in an open position;

a branch bleed air line extending from the air inlet line into the liquid receptacle;

a valve at the terminus of the branch bleed air line;

means for automatically opening the valve at the terminus of the branch bleed air line to depressurize the air line delivering air to the normally closed air operated valve in the liquid inlet line when the liquid in the liquid receptacle exceeds the predetermined desired level and for automatically closing the valve at the terminus of the branch bleed air line when the liquid level in the liquid receptacle drops below the level wherein the valve at the terminus of the branch bleed air line automatically opens; and

a needle valve located upstream of the branch bleed line for maintaining air in the air line delivering source air to the normally closed air operated valve at a rate sufficient to replenish air lost by normal system leakage but not by loss due to the opening of the valve at the terminus of the branch bleed line.



3,858,603

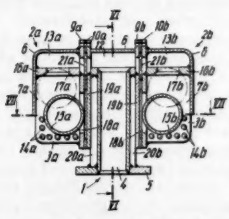
AIR VENT HEAD

Josef Lenz, 2831 Russen, Haus, Germany

Filed Feb. 8, 1973, Ser. No. 330,663

Int. Cl. F16k *31/22*; **B63j** *2/02*

U.S. Cl. 137—433 **8 Claims**



1. In an air vent head, especially for ventilation of ship's tanks, including a joint chamber having a center line connectable to a ventilating duct, an overhead chamber and at least one orificial chamber connected to the underside of said overhead chamber and containing a check valve with a float ball to prevent the entrance of water from outside, the improvement comprising,

means defining at least one plane parallel to the center line of said joint chamber for dividing the air vent head into at least one peripheral unit and a central joint unit including said joint chamber and a central deflection chamber comprising that part of said overhead chamber facing said joint chamber,

said at least one peripheral unit including said orificial chamber and a peripheral deflection chamber comprising that part of said overhead chamber facing said orificial chamber,

said orificial chamber for the passage of said float ball including means forming a ball passage aperture within the chamber side wall facing said central joint unit.

3,858,604

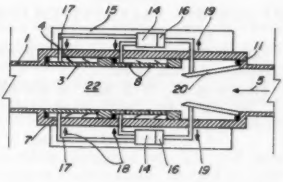
AUTOMATIC IN-LINE VALVE HAVING MULTIPLE CONICAL VALVE SECTIONS

John H. Bender, Jr., 2363 B-48th St.; Dorval D. Jeffries, 2059 E-41st St., both of Los Alamos, N. Mex. 87544; Ethen L. Ekberg, Rt. No. 1, Espanola, N. Mex. 87105, and Leo A. Waldschmidt, 3229 A-Walnut St., Los Alamos, N. Mex. 87544

Filed Oct. 25, 1973, Ser. No. 409,608

Int. Cl. F16k *17/02*

U.S. Cl. 137—488 **4 Claims**



1. An automatic in-line valve for any tubular conduit comprising; a housing multiple conical valve sections in series with each other and contained within said housing, the first of said sections composed of:

a. a plurality of triangular-shaped segments being mounted within said housing and connected pivotably thereto;

b. said segments each having a sail-type vane attached to the exterior edge;

c. said segments having a plurality of orifices;

d. said orifices declining in both size and number in each of the succeeding valve sections; a second single conical valve section composed of:

a. a plurality of triangular-shaped segments being mounted within said housing and connected pivotably thereto;

b. said segments each having a sail-type vane attached to the exterior edge; and

c. being situate last in the series of the said first sections; and means contained within the said housing and connected to the individual segments to automatically open and close said segments of the first and second sections.

3,858,605

LAMELLAR VALVE

Friedrich Bauer; Karl Berger, and Hans Hrabal, all of Vienna, Austria, assignors to Hoerbiger Ventilwerke, Vienna, Austria

Filed Dec. 12, 1973, Ser. No. 423,898

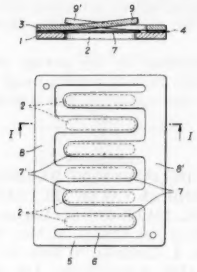
Claims priority, application Austria, Dec. 22, 1972, 10972/72

Int. Cl. F16k *15/16*

U.S. Cl. 137—512.15 **4 Claims**

1. A lamellar valve having a seating plate the throughflow openings of which are covered by a plurality of elastic tongues

arranged in parallel alongside one another, wherein the free ends of adjacent elastic tongues project alternately in opposite directions over the throughflow openings of the seating plate in a meshing arrangement.

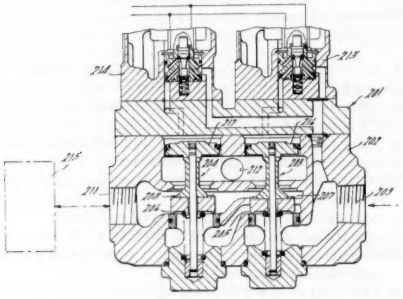


3,858,606

SAFETY CONTROL VALVE SYSTEM FOR FLUID ACTUATED DEVICES

Russell J. Cameron, Detroit, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.

Filed Aug. 23, 1973, Ser. No. 390,883
Int. Cl. F15b *13/043;* **F16k** *31/42*
U.S. Cl. 137—596.16 **2 Claims**



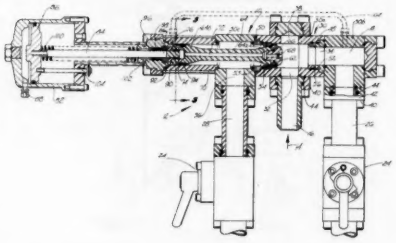
1. In a safety control valve system for fluid actuated devices, housing means having a supply port, an outlet port and at least one exhaust port, first and second main valve means in said housing means, each main valve means having supply and exhaust valve members and being shiftable between an open position in which its supply valve member is open and its exhaust valve member closed, and a closed position in which its exhaust valve member is open and its supply valve member is closed, means connecting the supply valve members of said first and second main valve means in series between said supply and outlet ports, means connecting the exhaust valve members of said first and second main valve means in parallel between said outlet and exhaust ports, whereby movement of either main valve means to its closed position when the other main valve means remains partially or fully in its open position will result in a complete cutoff of fluid pressure from the supply to the outlet port and a direct connection from the outlet port to the exhaust port, fluid pressure actuated means directly connected to both valve members of each main valve means for simultaneously shifting both valve members from one position to the other position, resilient means constantly urging both members of each main valve means in the opposite direction, at least one main valve means being so constructed that its fluid pressure actuated means will shift it from its open position to its closed position and its resilient means will shift it from it's closed position to its open position, and a solenoid operated pilot valve for each main valve means, each pilot valve being so constructed that it will maintain its main valve means in its closed position when the solenoid is de-energized.

3,858,607

THREE-WAY, TWO-POSITION DIVERTER VALVE

William J. Baker, Orange, Calif., assignor to Armco Steel Corporation, Middletown, Ohio

Filed June 1, 1973, Ser. No. 366,125
Int. Cl. F16k *11/00, 31/30*
U.S. Cl. 137—625.5 **15 Claims**



1. In a three-way, two-position diverter valve for high pressure application used to direct inlet fluid flow through one of two outlets, as desired, of the type having a valve body comprising an inlet flow passage, first and second outlet flow passages and a valve chamber communicating with said inlet passage and each of said outlet flow passages, a valve seat circumscribing each of said outlet flow passages, a valve member shiftably supported in said valve body for movement between a first position in sealing engagement with one of said valve seats, wherein flow is directed from said inlet flow passage through said first outlet flow passage, and a second position in sealing engagement with the other of said valve seats, wherein flow is directed from said inlet flow passage through said second outlet flow passage, and actuator means associated with said valve member for moving said valve member between said first and second positions, said actuator means including an actuator stem and means for applying force tending to move said actuator stem in one direction, or downwardly, the improvement, in combination therewith, comprising a passage extending through said valve member, an annular valve plug encircling said valve member, said vlave plug being sealingly secured to said valve member by annular seals of rectangular cross-section the corners of which have been cut-off on 45° to provide line contact with said valve seats, said vlave seats comprising an annular seat ring with the edges of the inside diameter thereof being radiused to provide line contact with said corners of said annular seals sealing said valve plug to said valve member, a balance rod connected to said valve member and having a free end projecting from said valve member, the free end of said balance rod being secured to said actuator means, means providing a pressure chamber at said free end of said balance rod, means communicating with said passage in said valve member and with the area above said balance rod in said pressure chamber alternately connecting said pressure chamber with said inlet flow passage, when said valve member is in said first position, and with said first outlet flow passage, when said valve is in said second position, the area of the free end of said balance rod being slightly less than the area of each said valve seat, so that said valve member and said balance rod create opposing forces,

with said actuator stem for moving said valve member being intentionally unbalanced, so as to create a need for an increasing force to stroke said valve member with increasing fluid pressure in said valve chamber and to provide a force to assist said actuator means in the upward direction, whereby an engineered unbalance of said actuator stem is used in a manner that stabilizes the effects of normal variations in seating contact area.

3,858,608

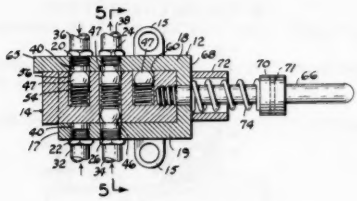
PNEUMATIC SUPPLY AND VENT CONTROL VALVE

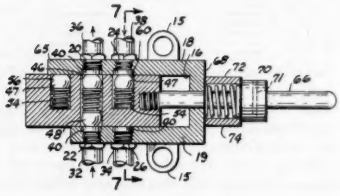
Joshua D. Hall, Boiling Spring Lakes, N.C. 28461

Filed Dec. 12, 1973, Ser. No. 424,244

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.25 **5 Claims**





1. A fluid supply and vent valve, comprising:

an elongated housing having a socket therein open at one end of the housing,

said body having a pair of transverse longitudinally spaced-apart supply ports communicating with the socket and forming aligned supply ports at opposite sides of the housing,

said body having a pair of vent ports communicating with the socket in cooperative longitudinally spaced-apart relation with respect to the axis of the supply ports;

a sliding valve reciprocably disposed at one end portion within

the socket for movement between two positions,

said sliding valve having a transverse passageway movable into and out of registration with the housing ports,

said sliding valve having three vent ports longitudinally spaced-apart a distance equal to the spacing between said housing supply ports,

whereby two of said sliding valve vent ports communicate with said housing supply ports when said sliding valve is in its respective operative position;

means normally biasing said sliding valve toward one of said two operative positions; and,

locking means for maintaining said sliding valve in the other said operative position,

whereby said sliding valve alternately provides air pressure supply through one said supply port while blocking fluid through the other said supply port at one side of the housing and simultaneously venting fluid from the supply port aligned with the opposite blocked supply port.

3,858,609

APPARATUS FOR OPENING AND CLOSING THE ASCENSION PIPE LID AND VALVE FLAP ON THE ASCENSION PIPE OF A COKE OVEN

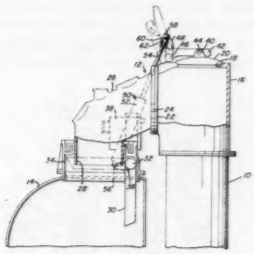
Walter Stanke; Werner Wortberg, and Karl Otto Fuckert, all of Essen, Germany, assignors to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed June 13, 1973, Ser. No. 369,723

Claims priority, application Germany, June 21, 1972, 2230087

Int. Cl. C10b *27/06*

U.S. Cl. 137—627.5 **7 Claims**



1. Apparatus for sequentially opening and closing the valve member and ascension pipe lid of a coke oven ascension pipe assembly comprising,

an ascension pipe elbow connected at one end to an ascension pipe and at the other end to a collecting main, said ascension pipe elbow having an open end portion connected to said collecting main,

a valve member positioned adjacent said ascension pipe elbow open end portion and arranged to close said elbow open end portion,

said ascension pipe elbow having an access opening therein above said ascension pipe to provide access to the inner surface of said ascension pipe,

a lid member positioned in overlying relation with said access opening and arranged to close said access opening, actuator means connected to said valve member and said lid member,

said actuator means including a telescopic member connected at one end to said valve member and at the other end to said lid member,

said actuator means arranged to sequentially first close said valve member and thereafter open said lid member and first close said lid member and thereafter open said valve member, and

said actuator means telescopic member arranged to retract and pivot said valve member and close said ascension pipe elbow open end portion.

3,858,610

RELAY VALVE

Boleslaw Klimek, Des Plaines, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.

Filed May 29, 1973, Ser. No. 364,306

Int. Cl. F16k *31/12*

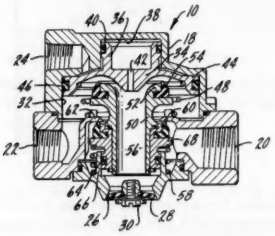
U.S. Cl. 137—627.5 **1 Claim**

1. A relay valve including a housing having a supply port, a delivery port, a service port and an exhuast port, a piston movable in said housing in response to air pressure at said service port, a spring in said housing normally biasing said piston toward said service port, a seal member on said piston forming a seal with a portion of said housing,

a shuttle movable in said housing, said housing having a portion forming a valve seat between said supply and delivery ports, axially spaced seal members having generally the same diameter fixed to said shuttle, spring means

positioned about said shuttle and seated against said housing for normally biasing one of said shuttle seal members toward a closing position with said valve seat to close communication between said delivery and supply ports, said housing including a wall concentric with said shuttle and positioned within said shuttle spring means, said other shuttle seal member being in sealing contact with said wall, with said axially spaced shuttle seal members forming balancing air pressure responsive areas on said shuttle,

a third seal member at one end of said shuttle and positioned for contact with one side of said piston and having generally the same diameter as said piston seal member, said shuttle having an interior passage communicating with said exhaust port and with said delivery port when said third shuttle seal member is spaced from said one side of said piston, said one side of said piston having a



passage forming curved surface portion projecting toward and positioned to extend within said shuttle interior passage, the shuttle end adjacent said shuttle end seal member having a similar curved surface communicating with said shuttle interior passage, with the combination of said curved surfaces providing a smooth non-turbulent air passage between said delivery and exhaust ports,

air pressure at said service port moving said piston toward said shuttle end seal member with closing of said piston upon said shuttle end seal member closing communication between said delivery and exhuast ports, further movement of said piston responsive to air pressure at said service port moving said shuttle seal member away from said seat to open communication between said supply and delivery ports, with said shuttle end seal member and piston seal member creating generally equal air pressure responsive areas on said piston.

3,858,611

STEP OPENING THERMOSTATIC CONTROL DEVICE

George L. Thayer, St. Miraloma, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 7, 1973, Ser. No. 357,736
Int. Cl. F03g *7/06*; **F16k** *31/56*
U.S. Cl. 137—630.14 **2 Claims**

1. A step opening thermostatic control device comprising

a casing having inlet and outlet means and a flow passage therebetween;

main valve means movable between open and closed positions to control flow through said flow passage, said main valve means including a main valve seat disposed in said flow passage, a main valve member cooperating with said main valve seat and a hollow main valve stem carrying said main valve member;

step valve means movable between open and closed positions to control flow through said flow passage, said step valve means including a step valve seat carried on said main valve stem, a step valve member cooperating with said step valve seat and a step valve stem carrying said step valve member and extending through said main valve stem;

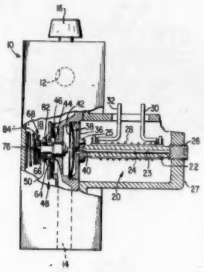
temperature responsive means having an actuated state and a released state;

a first coiled spring mounted in compression between said casing and said step valve member and biasing said main valve means and said step valve means toward said closed positions; and closed positions; and

a second coiled spring mounted in compression between said main valve stem and said step valve stem and biasing said step valve member toward said step valve seat,

said main valve member having a movement away from said main valve seat to open said main valve means, which movement causes said step valve seat to engage said step valve member to close said step valve means;

said temperature responsive means moving said step valve stem to move said step valve member away from said step valve seat against the force of said first and second spring



means to initially open said step valve means when said temperature responsive means moves to said actuated state, and said main valve member being moved away from said main valve seat by said second spring means and said temperature responsive means after said initial opening of said step valve means to open said main valve means whereby said thermostatic control device has a step opening characteristic with the opening of said main valve means delayed after the initial opening of said step valve means,

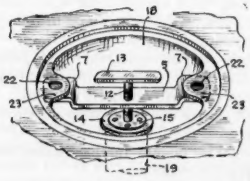
said temperature responsive means includes snap acting means mounted on said casing and a heat-motor thermostat operating said snap acting means, said heat-motor operator including a rod having a high thermal coefficient of expansion engaging said snap acting means and a heating coil for heating said rod.

3,858,612

FLOOR DRAIN STOPPER

Arthur Van Steenburg, Rt. 3, Spirit Lake, Iowa 51350

Filed Oct. 12, 1973, Ser. No. 406,004
Int. Cl. F16l *55/10*
U.S. Cl. 138—89 **3 Claims**



1. A stopper for use in combination with a floor drain to prevent liquids from backing up in the drain from the sewer line, said drain containing a bowl connected at the bottom to a drain pipe, a perforated cover plate and lips with threaded

holes on opposite top edges of the bowl, said stopper having a flat, metal bar containing a straight middle portion having a threaded hole at approximately the center thereof and end portions bent upwardly and outwardly and containing holes to align with the holes in the lips to receive fastening bolts in order to lay in a plane above and substantially paralell with said middle portion and to brace under said lips;

a stopping means containing a multiple layer, circular plate to fit over the drain pipe opening; and

a bolt threaded into said hole in the middle portion of the bar and pivotally connected to said stopping means to force the stopping means downwardly over the drain pipe opening and to force the ends of the bar upwardly against said lips.

3,858,613

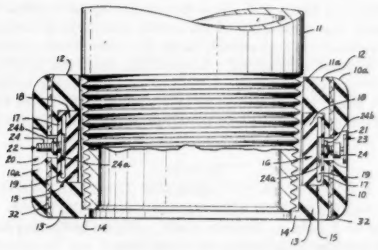
PIPE THREAD PROTECTOR

L. J. Musslewhite, 8315 69th Ave., Edmonton, Alberta, Canada

Continuation of Ser. No. 179,903, Sept. 13, 1971, abandoned. This application July 9, 1973, Ser. No. 377,825

Int. Cl. B65d *59/06*

U.S. Cl. 138—96 T **6 Claims**



1. A pneumatically actuated pipe thread protector comprising, in combination: a relatively rigid annular boot made of a rubber-like resilient material, said boot including two spaced apart abutment means for supporting and aligning said thread protector with a relatively loose fit about a portion of a pipe to be protected and forming an annular groove in the interior of said protector, one of said abutment means including an annular lip disposed to abut the end of a pipe being protected and limit the movement of said thread protector along the axis of said pipe, said annular lip extending inwardly toward the center of the pipe substantially no further than the thickness of the end wall of the pipe and the inwardly facing edge of said lip forming a circular opening substantially no smaller than the openings in the end of the pipe to be protected so that said opening in the end of said pipe is left substantially unobstructed when the protector is mounted on the pipe; said boot further including at least two openings each extending through the outer wall of said protector; an inflatable tube mounted in said annular groove, said tube adapted to surround said protected portion and inflatable to and deflatable from a position wherein said tube frictionally engages said portion with a relatively tight fit; a first valve means extending from the interior of said tube and into one of said openings and being substantially recessed within said opening for permitting introduction of air into said inflatable tube; a second valve means extending from the interior of said tube and into another of said openings for permitting removal of air from said inflatable tube whereby said protector may be rapidly placed about said portion to be protected, inflated to frictionally grip said portion, and rapidly deflated to release said grip for removal from said portion; and a band of pliable reinforcing material disposed in said boot between said annular groove and the outside wall of said boot for restraining substantial movement of said boot away from said protected portion when air is introduced into said inflatable tube.

3,858,614

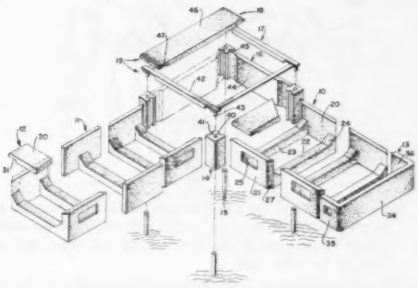
CABLE TROUGH

William Cabell Moore and Frank L. Hendricks, Jr., both of P.O. Box 3573, 5000 Castlewood Rd., Richmond, Va.

Continuation-in-part of Ser. No. 158,706, July 1, 1971. This application Nov. 15, 1972, Ser. No. 306,870

Int. Cl. F16l *1/00;* **E02d** *29/10*

U.S. Cl. 138—105 **2 Claims**



1. A precast concrete trough for supporting and enclosing electric cables for above-ground or below-ground installation, which comprises a series of abutted sections in which each section has:

a. a unitary base member including side walls and cross braces,

b. said cross braces of generally rectangular cross section,

c. said cross braces having enlarged reinforced bevels at either end,

d. said cross braces in parallel alignment and abutting the inner surface of said side walls at the lateral extremities of said side walls,

e. said cross braces further aligned so that their lower surface is aligned with the lower surface of said side walls,

f. said side walls case into the unitary base piece with said cross braces to form a unitary free standing structure capable of supporting and enclosing the electric cables in an above-ground installation,

g. an aperture formed by the side walls and the cross braces in the bottom of the section for entrance and exit of the electric cable,

h. a top member demountably attached to the base member and spanning the distance between the side walls, said top member generally rectangular and forming a load bearing surface.

i. an expansion section having a single elongated, generally rectangular, base section with enlarged bevels at either end and a pair of side walls, said cross brace abutting said side walls at the center of the inner surface, the lower surface of the cross brace further aligned with the lower surfaces of the side walls, the inner surfaces of the side walls so spaced apart to slide outside the outer surfaces of the side walls of the said abutting sections.

3,858,615

FLEXIBLE HOSE CONSTRUCTION

James Weigl, Santa Monica, Calif., assignor to Puritan-Bennett Corporation, Kansas City, Mo.

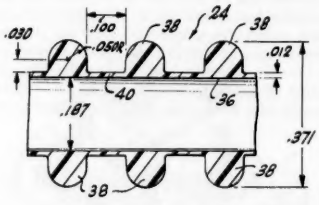
Filed Dec. 11, 1972, Ser. No. 313,982

Int. Cl. F16l *11/06*

U.S. Cl. 138—121 **14 Claims**

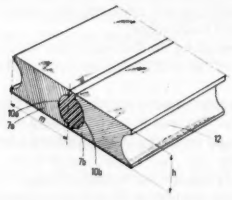
1. A light, flexible hose construction resistant to blocking by bending, for use with respiration apparatus, comprising:

a thin-walled tube of resilient, flexible material having a smooth generally cylindrical inner wall surface;
and a plurality of external annular reinforcing rings of the same material integrally formed on the outer wall of the tube;
the rings being concentric with the tube and arranged in axially spaced relation along the major portion of the length of the tube;



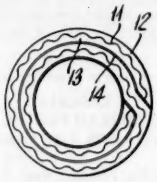
the axial length of the unsupported portion of the tube wall between successive rings being from about 50 percent to about 75 percent of the diameter of said inner wall surface of the tube; and
the radial thickness of the unsupported portion of the tube wall between successive reinforcing rings being from about 5 percent to about 9 percent of said diameter;
whereby the rings are spaced and sized to prevent substantial blocking of the tube due to bending, without impairing flexibility.

3,858,616
TIGHT FLEXIBLE PIPE
Jean Thiery, Le Pecq; Michel Chatard, Chatou; Michel Huvey, Bougival, and Gerard Bonavent, Rueil-Malmaison, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants
Filed Nov. 27, 1973, Ser. No. 419,354
Claims priority, application France, Dec. 8, 1972, 72.43797; May 16, 1973, 73.17842
Int. Cl. F16l *11/08*
U.S. Cl. 138—133 **35 Claims**



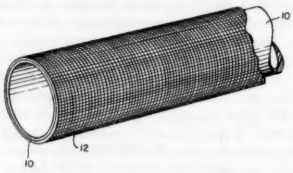
1. A tight flexible pipe comprising at least one flexible sheath, at least one first flexible armouring withstanding crushing stresses, said flexible sheath ensuring the internal tightness of the pipe and being in contact with one of the internal and external walls of said first armouring and at least one second armouring, surrounding the assembly constituted by said flexible sheath and said first armouring, said second armouring withstanding tractive and/or bending stresses applied to the pipe and comprising at least one layer of preformed rods which are helically wound with a high winding pitch, said rods having such a profiled cross-section that the walls of adjacent rods of said layer which face each other delimit between each other substantially confined spaces and wherein each of said space is filled with a resilient material ensuring the tightness of the pipe between said rods of said layer of said second armouring.

3,858,617
FIBER REINFORCED POLYMERIC RESIN TUBE STRUCTURE
Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 26,277, April 7, 1970, abandoned. This application Mar. 30, 1972, Ser. No. 239,821
Int. Cl. F16l *9/12*
U.S. Cl. 138—141 **8 Claims**



1. A multiple ply tubular structure comprising a single integral web including opposite outer layers of synthetic organic polymeric resins of different properties and having reinforcing fibers embedded therein and spirally cylindrically wound into a plurality of successive overlapping contiguous convolutions of successively larger diameter about a longitudinal axis and delineating a longitudinal bore, the confronting faces of successive convolutions of said web being bonded to each other, one of said outer layers forming the inside face of said tubular structure and the other of said outer layers forming the outside face of said tubular structure.

3,858,618
PIPING FOR FIRE PROTECTION SYSTEMS
John W. Kaufman, Tiburon, Calif., assignor to Factory Mutual Research Corporation, Norwood, Mass.
Filed Jan. 10, 1973, Ser. No. 322,383
Int. Cl. F16l *9/14*; **A62c** *35/16*
U.S. Cl. 138—149 **4 Claims**

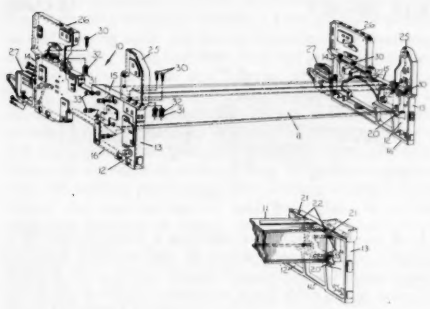


1. Piping for use in fire protection systems, said piping comprising a plastic tubular member, and a woven wire screening material covering said tubular member at least partially in a spaced relationship therewith so as to at least partially insulate said piping from fire and heat deterioration thereby limiting any failure of the tubular member to small pin holes which permit water in the system to escape therethrough, dripping onto the screening material to cool it and prevent further transfer of heat to the tubular member.

3,858,619
METHOD OF SUPPORTING MAIN GIRT
Ronald Berry, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Oct. 19, 1973, Ser. No. 408,025
Int. Cl. D03d *49/02*
U.S. Cl. 139—1 R **3 Claims**

1. A sectional loomside for use in the construction of weaving looms having a main girder, said improved loomside com-

prising a primary loomside support section, means formed integrally on one side of said primary support section for receiving the loom main girder to locate the end thereof at a preselected location with respect to the perimetrical limits of



said primary support section and a plurality of secondary support sections removably secured to said primary support section for removing parts of the loom other than the main girder.

3,858,620

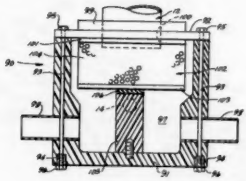
FOUNTAIN BASE WITH INTERNAL STRAINER

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

Division of Ser. No. 304,244, Nov. 6, 1972, , which is a continuation-in-part of Ser. No. 87,886, Nov. 9, 1970, Pat. No. 3,705,686. This application Dec. 5, 1973, Ser. No. 421,801

Int. Cl. B05b *17/08*

U.S. Cl. 239—17 **3 Claims**



1. A support base for an ornamental fountain nozzle comprising:

a. a housing body defining therein an upwardly open chamber having side walls and a bottom and a water inlet opening communicating through the body to the chamber via a sidewall of the chamber,

b. a cover matable with the body for closing the chamber and defining a chamber outlet opening and means for mounting a desired fountain nozzle coaxially of the outlet opening with the lower end of the nozzle depending into the chamber,

c. water flow directing and controlling means extending centrally of the chamber from the bottom thereof partially toward the upper end of the body, and

d. a flow diffusing assembly adapted to be supported upon the upper end of the directing and controlling means and to be positioned coaxially of the chamber by registry with the lower end of a nozzle mounted to the cover.

3,858,621

MECHANISM FOR ACTUATING THE SLAY OF A WEAVING LOOM

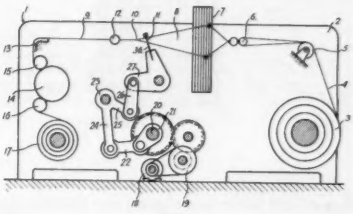
Pavel Dvoracek, Brno; Jaromir Malasek, Ostrava; Vladimir Kuda, and Adolf Slezak, both of Brno, all of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Apr. 6, 1972, Ser. No. 241,778

Claims priority, application Czechoslovakia, July 12, 1971, 5088-71

Int. Cl. D03d *49/64*

U.S. Cl. 139—190 **3 Claims**



1. An articulated joint mechanism for transmitting to the slay of a weaving loom a reciprocating motion derived from a uniform rotating motion with a delay of the motion of the slay in one of the extreme positions of its reciprocating movement sufficient for picking the weft through the shed, said mechanism comprising a rotating crank element, a rocker lever and an operating element carrying the slay of the loom, means for supporting the crank element for rotation, means for pivotally supporting the rocker lever and the operating element, a connecting rod linking the crank element with the rocker lever, a pitman linking the rocker lever with the operating element, the fulcrum axis of the connection of the rocker lever with the connecting rod lying on a circle in at least one position of the operating element in the course of the delay of its reciprocating movement, the diameter of said circle being the line connecting the axis of the pivotal support of the rocker lever and the axis of rotation of the crank element, whereby the axis of the fulcrum of the pitman and of the operating element is in at least one position of the operating element in the course of the delay of its reciprocating movement located on a second circle, the diameter of said second circle being the line connecting the axis of the pivotal support of the rocker lever and the axis of the pivotal support of the operating element.

3,858,622

NARROW ELASTIC FABRIC FOR APPAREL WAISTBANDS

Roger G. Campbell; Richard E. Goff, Jr., both of Barrington, and Normand D. Guay, Woonsocket, all of R.I., assignors to Johnson & Johnson, New Brunswick, N.J.

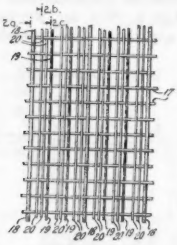
Filed June 14, 1973, Ser. No. 370,103

Int. Cl. D03d *15/08;* **A41d** *1/06*

U.S. Cl. 139—421 **7 Claims**

1. A thin, lightweight, narrow elastic fabric having a face surface and a back surface and suitable for use in the band encircling portion of an article of apparel, said fabric comprising a set of monofilament filling yarns running in the transverse direction of the fabric and a set of warp yarns running in the longitudinal direction of the fabric, said set of warp yarns comprising elastic yarns, stretch synthetic yarns, and nonelastic yarns, there being twice as many stretch synthetic yarns as there are elastic yarns in the warp set and three times as many nonelastic yarns as there are stretch yarns in the warp set, said nonelastic yarns being woven with said filling yarns in a twill weave to form the face surface of said fabric, said face surface being primarily composed of said nonelastic yarns to

form a twill pattern on the face surface, said stretch synthetic yarns and said elastic yarns being woven with said filling yarns in a plain weave with at least two stretch synthetic yarns being disposed between adjacent elastic yarns to form the back



surface of said fabric, said elastic yarns forming a complimentary diamond pattern on the face surface of said fabric whereby the monofilament filling yarns are covered and stabilized in the fabric.

3,858,623

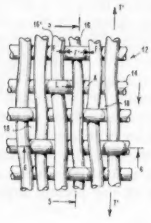
PAPERMAKERS FABRICS

Leonard R. Lefkowitz, Latham, N.Y., assignor to Huyck Corporation, Rensselaer, N.Y.

Continuation of Ser. No. 831,899, June 10, 1969, abandoned. This application Nov. 15, 1973, Ser. No. 416,226

Int. Cl. D03d *15/00, 15/02;* **B01d** *39/10*

U.S. Cl. 139—425 A **11 Claims**



1. A forming belt for a papermaking machine comprising:

a. nondeformable warp and weft yarns interwoven to form said belt with certain of said yarns extending in the lengthwise direction of said belt and other yarns extending in the widthwise direction of said belt, said widthwise yarns being woven such that they are not interlaced between two adjacent lengthwise yarns at a point where said widthwise yarns will interfere with lateral crimping in said lengthwise yarns;

b. the vertical distance between the axes of adjacent lengthwise yarns being less than the diameter of said widthwise yarns to substantially reduce vertical crimp in said lengthwise yarns; and,

c. said widthwise yarns having a diameter, measured at a point where said widthwise yarns contact adjacent lengthwise yarns, which is greater than the arithmetical mean displacement between adjacent surfaces of said lengthwise yarns, the lateral distance between adjacent lengthwise yarns varying substantially continuously along the length of the fabric to accommodate the interlacing of said widthwise yarns.

3,858,624

SPOOL WINDING MACHINE

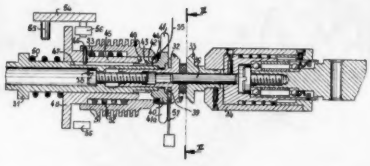
Pierre Sallin, Geneva, Switzerland, assignor to Productions Sarcem S.A., Geneva, Switzerland

Filed June 28, 1973, Ser. No. 374,505

Claims priority, application Switzerland, July 18, 1972, 10752/72

Int. Cl. B21f *3/00*

U.S. Cl. 140—92.2 **16 Claims**



1. A winding machine comprising a rotatable spindle, a rotatable counter-spindle driven by said rotatable spindle, a driving motor for rotating said spindle, a wire guide displaceable with reciprocable linear movement parallel to the axis of the spindle and the movement of which is controlled by the rotation of the spindle, a numerical control device for the cycle of the winding machine, a wire-clamping device and a wire-cutting device mounted on the spindle, a cam mounted on the spindle for rotation with the spindle for introducing wire into said clamping device, said cam comprising a plate having therein at least one radial notch for the reception of the wire, means mounting the spindle for axial reciprocal movement, and spring means urging the spindle toward said cam.

3,858,625

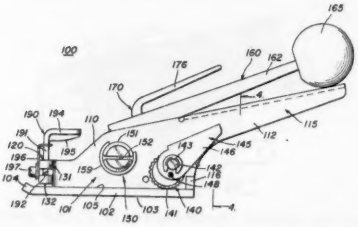
STRAP TENSION TOOL

George Milan Banjeglav, Dolton, Ill., assignor to Interlake, Inc., Chicago, Ill.

Filed Sept. 20, 1973, Ser. No. 399,398

Int. Cl. B21f *9/00*

U.S. Cl. 140—123.6 **7 Claims**



7. A strap tension tool for tightening a plastic strap around a package comprising a frame including a base plate adapted to be rested upon an associated package and two spaced-apart bearing walls integral therewith and extending upwardly therefrom substantially parallel to each other, a generally cylindrical drum journalled in openings in said bearing walls and having a toothed portion disposed between said bearing walls and a strap engaging portion having a strap receiving slot therein and extending outwardly from one of said bearing walls and overlying a portion of said base plate, a gripping dog pivotally mounted on said one bearing wall and overlying said base plate adjacent to the strap engaging portion of said drum for holding one end of a strap against said base plate during tightening of the strap about an associated package, an operating handle having bearing flanges integral therewith provided with openings therethrough receiving said drum rotatably to mount said operating handle for reciprocation with respect to

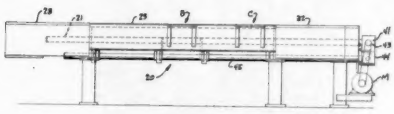
said base plate, a drive pawl pivotally mounted on said operating handle and having a nose continually urged into driving contact with the toothed portion of said pawl when said operating handle is pivoted with respect to said base plate in a direction to tighten an associated strap, a holding pawl pivotally mounted between said bearing walls and having a nose continually urged into engagement with the toothed portion of said drum to prevent retrograde motion of said drum when said operating handle is pivoted in a direction opposite to the strap-tightening direction thereof, a knife pivotally mounted on said bearing walls and having a cutting edge overlying a strap extending along said base plate and movable between a strap-tightening position and a strap-cutting position, means biasing said knife to the strap-tightening position thereof and an actuating flange on said knife engageable with said operating handle as said operating handle is moved toward the position nearest said base plate in a strap-tightening direction, a release bar mounted on said operating handle and engageable with said holding pawl when said operating handle is moved toward the position nearest said base plate in a strap-tightening direction to release said drum from contact with said holding pawl, a release lever for said drive pawl integral therewith and extending along the top of said operating handle substantially parallel thereto and spaced a short distance therefrom for simultaneous actuation by the hand of a user operating handle, and an abutment on said base plate in position to engage said release lever when said operating handle is moved to the position nearest said base plate in a strap-tightening direction to release said drum from contact with said drive pawl, whereby movement of said operating handle to the position nearest said base plate in a strap-tightening direction causes said release bar to engage said holding pawl to move it out of contact with said drum and thereafter to engage said actuating flange to move said knife to the strap-cutting position thereof and thereafter to bring said release lever into contact with said abutment, thus automatically to cut the strap and to free said drum for retrograde rotation to facilitate removal of strap wound thereon.

3,858,626

CONVEYOR SYSTEM

James E. Ribordy, South Beloit, Ill., assignor to Rockford Automation Inc., Rockford, Ill.

Filed Nov. 7, 1973, Ser. No. 413,568
Int. Cl. B61b *13/00*
U.S. Cl. 104—166 **20 Claims**



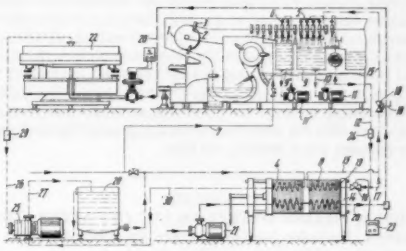
1. In a conveyor system including pallets mounted for movement along a definite pathway by frictional contact between a rotating drive shaft arranged parallel to the pathway and at least one drive wheel carried by the pallet, the drive wheel being pivotally mounted on the pallet for movement between a drive position oblique to the longitudinal axis of the drive shaft and a stop position parallel to said axis, and means for resiliently urging the drive wheel toward the drive position; the improvement comprising; an arm extending laterally of said pathway and operatively connected to the drive wheel for moving the drive wheel from the drive position to the stop position; means mounting at least a portion of the arm for vertical movement between a first normal position and at least one other position vertically spaced therefrom; a stop mounted adjacent the pathway for engagement by the arm when in its first position to stop the pallet; and the stop being shaped so that it is not engaged by the arm when the arm is in said other position.

3,858,627

BEVERAGE PROCESSING PLANT WITH REDUCED WATER CONSUMPTION

Aloys Hinxlage, Dortmund, Germany, assignor to Holstein & Kappert Maschinenfabrik "Phonix" Gmbh, Dortmund, Germany

Filed Nov. 20, 1972, Ser. No. 308,123
Claims priority, application Germany, May 26, 1972, 2225676
Int. Cl. B65b *3/04*; **B67c** *1/00*
U.S. Cl. 141—1 **10 Claims**



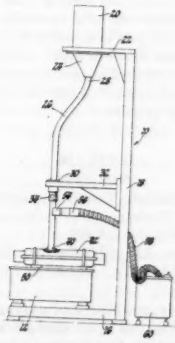
1. Method of preparing bottles in a bottling operation prior to filling the bottles with a liquid, including the steps of passing the bottles, in turn, through a cleaning solution zone and spraying the bottles with a high-pressure cleaning solution, through a hot water spraying zone and spraying the bottles with hot water and then through a fresh water spraying zone and spraying the bottles with fresh water, wherein the improvment comprises the steps of collecting the water sprayed on the bottles in the hot water spraying zone and the fresh water spraying zone, passing at least the water collected from the hot water spraying zone in indirect heat exchange relationship with the liquid to be filled into the bottles which liquid is at a lower temperature than the collected water so that the collected water is cooled and the liquid to be bottled is heated, and returning the cooled water for at least reuse in the hot water spraying step.

3,858,628

CATALYTIC CONVERTER FILLING APPARATUS

William J. Bendle, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1973, Ser. No. 418,836
Int. Cl. B65b *31/00*, *1/06*
U.S. Cl. 141—46 **2 Claims**



1. An apparatus for filling a catalytic converter with a granular catalyst material comprising, a vibrator, means on said

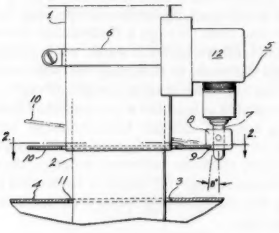
vibrator adapted to secure said catalytic converter in a fixed position during filling, catalyst storage means having an outlet at the bottom thereof, a fill hose connected to said outlet at one end with the other end adapted to be connected to said converter to convey the catalyst material from the storage means to the converter, valve means to control the flow of catalyst material in said fill hose comprising a plurality of perforations in a section of the wall of said fill hose adjacent said other end, the size of said perforations being smaller than the size of said catalyst material to prevent the catalyst material from spilling through the opening in said fill hose as it flows from said storage means to the converter, a vacuum hose secured to said perforated section of said fill hose, and a vacuum source connected to said vacuum hose to apply a vacuum in the fill hose at said perforated section, whereby the catalyst material flowing in the fill hose is sucked up against said perforations and is held in a tight compact to close off the fill pipe and catalyst material flow, thereby preventing spillage of the catalyst material when the fill hose is removed from the converter after the converter is filled and avoiding crushing of the granules when shutting off flow.

3,858,629

DRUM FILLING OVERFLOW CUT-OFF APPARATUS

Henry L. Bachofer, Newtown Square, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Dec. 5, 1973, Ser. No. 421,905
Int. Cl. B65b *3/28, 57/04*
U.S. Cl. 141—227 **4 Claims**



1. A device for controlling drum filling wherein a liquid is pumped into a drum through a nozzle inserted in a fillhole in the drum with an annular space defined between the nozzle and the fillhole comprising

a. a drum filling power circuit,

b. a disc positioned in a horizontal plane above the annular space and upwardly moveable in response to liquid leaving the drum through the annular space,

c. a vertically positioned and normally closed electrical toggle switch in the power circuit which breaks the circuit when in the open position which switch is connected to the disc and is actuated to an open position by predetermined upward movement of the disc out of its previously horizontal plane position.

3,858,630

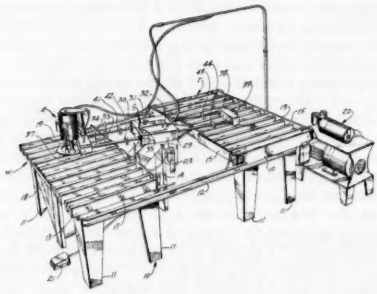
ROUTER

Loren D. Cherry, Glendale; Ronald L. Congrove, and David E. Ohlson, both of Phoenix, all of Ariz., assignors to Royal Industries, Inc., Pasadena, Calif.

Filed Apr. 13, 1973, Ser. No. 350,890
Int. Cl. B27c *5/02;* **B23q** *35/04*
U.S. Cl. 144—144 **8 Claims**

1. A woodworking machine tool comprising a frame for supporting a pair of spaced apart workpiece supporting beds, a woodworking machine tool supporting member having a pair of arms extending in opposite directions from the member for overlying each of the supporting beds, and a woodworking machine tool mounted on one of said arms to be movable along with the arms and rotatable relative to the tool supporting member for positioning the tool in cutting relationship with a workpiece mounted on one of the supporting beds,

the arm extending in the opposite direction from said one arm carrying a profile following element for controlling



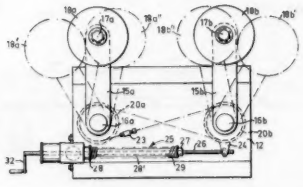
the path through which the woodworking machine tool is moved to allow the tool to be moved through a preselected profile for cutting a workpiece to a shape corresponding to the path defined by the profile following element when the profile following element is constrained to follow a path defined by a template mounted on the other supporting bed.

3,858,631

DEVICE FOR CENTERING OF TIMBER BLOCKS AND THE LIKE

Per Lief Andersson, and Rune Sigfrid Lind, both of Farila, Sweden, assignors to Skogsagareforeningen Mellanskog u.p.a., Gavle, Sweden

Filed Sept. 21, 1973, Ser. No. 399,495
Claims priority, application Sweden, Sept. 25, 1972, 12361
Int. Cl. B27b *31/00*
U.S. Cl. 144—246 F **2 Claims**

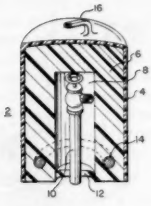


1. In apparatus for centering timber blocks or the like being fed into sawing machines centering means including assemblies swingably disposed for working on opposite sides of a block, means coupling said assemblies so that they move from a normal position outwards from each other or inwards towards each other an equal distance, said coupling means including at least one endless member running in opposite directions over wheels or the like attached to said assemblies means, and a spring device which determines the normal position coupled with at least one of said assemblies and including a screw and a cooperating nut and a spring mounted on the screw between the nut and a stop so that the screw may be tensioned by turning of the nut, said screw being connected to an arm mounted on said one assembly by a nut which is penetrated by said screw, said screw being turned in relation to the nut in order to set the starting position of the centering means.

3,858,632
INSULATING COVER FOR GROUND FAUCETS

Bob Stout, Dallas, Tex., assignor to Joseph S. Rhodes, Mesquite, Tex.

Filed Dec. 10, 1973, Ser. No. 423,071
Int. Cl. F16l 59/00
U.S. Cl. 150—52 R 6 Claims



1. A cover for insulating ground faucets and the like comprising

a casing open at its base,

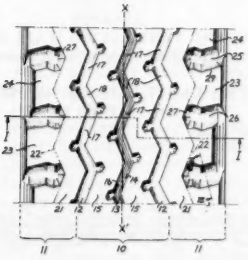
insulating material lining the interior of said casing, the interior surface of said material defining a cavity for receiving a faucet thereinto,

weighting means disposed in said insulating material near the base of the casing to stabilize the cover when it is placed on the ground over a faucet.

3,858,633
HEAVY-DUTY RADIAL TIRE FOR USE ON AND OFF THE ROAD

Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale des Establissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

Filed Nov. 1, 1972, Ser. No. 302,930
Claims priority, application France, Nov. 8, 1971, 71.40040
Int. Cl. B60c 11/06
U.S. Cl. 152—209 R 8 Claims



1. A radial tire for heavy-duty vehicles comprising a tread having a central portion and two lateral portions, the central portion being formed with at least one circumferential rib and at least two circumferential grooves, the circumferential rib having a wall in common with each circumferential groove, and each lateral portion being formed with a substantially continuous circumferential zigzag rib and with alternating transverse grooves and blocks, each of said substantially continuous circumferential zigzag ribs defining angles that are alternately reentrant and salient, the transverse grooves forming extensions, in a direction towards the nearer edge of the tread, of the reentrant angles of the substantially continuous circumferential zigzag rib, the transverse blocks (a) forming extensions, in a direction towards the nearer edge of the tread, of the salient angles of the substantially continuous circumferential zigzag rib, (b) being contiguous with the substantially continuous circumferential zigzag, (c) alternately terminating at greater and lesser distances from the median plane of the tire, and (d) having a wall in common with the adjacent transverse grooves, the common walls of the transverse grooves and blocks having an inclination with respect to the normal to the tread surface that is greater than are the inclinations with respect to the normal to the tread surface of the common walls of the circumferential rib and circumferential grooves, the transverse grooves having at every level a greater width than the circumferential grooves have at the same level the total area of the substantially continuous circumferential zigzag ribs and blocks exceeding the total area of the circumferential rib or ribs in the central portion, the blocks having, in the circumferential and transverse directions, dimensions that exceed the width of the circumferential rib or ribs in the central portion, the transverse grooves having an angular course and perimeter, and the common walls of the transverse grooves and blocks having an inclination of 20° to 30° with respect to the normal to the tread surface.

3,858,634
TIRE CHAIN DEVICE

Victor S. Giannone, 952 Central Ave., Peekskill, N.Y. 10560

Filed Mar. 15, 1974, Ser. No. 451,386
Int. Cl. B60c 27/00
U.S. Cl. 152—213 A 4 Claims

1. In an adjustable tire chain assembly of the type having inboard and outboard straps of flexible materials and of adjustable circumference, means for forming the straps into rectilinear sections, and link chains extending between the inboard and outboard straps at spaced locations, that improvement in said means which comprises:

at least the terminal links of each link chain being elongated;

corner loop sections of the respective straps being extended through the terminal links;

a resilient butterfly plug for each terminal link to provide corner sections for said straps, the butterfly plugs each having an elongated tubular base, side wall means extending from the base, and a triangular top plate;

the butterfly plugs being positioned in said terminal links within the loop sections of the strap, with the straps formed at an angular relation by said triangular top plates on one side of the associated link, and with said tubular bases on the other side of said associated link; and

means preventing the displacement of said plugs and straps from said respective links.

3,858,635

COMPOSITE OF A METALLIC MATERIAL AND VULCANIZED RUBBER AND PROCESS FOR PRODUCTION THEREOF

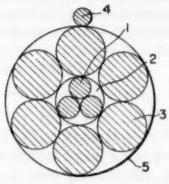
Yuzuru Nakamoto; Eishi Kubota; Kazuhiko Sakamoto; Koji Okuda; Takaaki Imamura; Shigeshia Sano, and Fukushi Suzuki, all of Tokyo, Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed June 19, 1972, Ser. No. 264,337

Claims priority, application Japan, June 21, 1971, 46-44648; Jan. 8, 1972, 47-4845

Int. Cl. B60c *9/00;* B32b *15/06*

U.S. Cl. 152—330 16 Claims



1. A composite formed by vulcanizing a rubber article containing steel reinforcement comprising a steel central core, and an inner coating of a metallic material for said core of a brass adapted to bond to said rubber article and an outer coating of a Group IV metal of the Periodic Table, said outer coating having a thickness from about 0.001 to 0.14 microns.

2. A process for forming a tire of a metallic material and vulcanized rubber which comprises contacting a brass coated steel core metallic material and an unvulcanized rubber and unifying them by vulcanization characterized in that the brass coated metallic material is coated with a film from about 0.001 to 0.14 microns thick of a metal selected from the metals of Group IV of the Periodic Table prior to contacting the metallic material with the unvulcanized rubber.

3,858,636

POLYCARBONAMIDE REINFORCED NON-FLATSPOTTING TIRES HAVING YARNS PENETRATED WITH ALIPHATIC ORGANIC, HYDROXYLATED PLASTICIZER AND THEIR MANUFACTURE

Richard W. Kibler, Cuyahoga Falls, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 784,970, Sept. 23, 1968, Pat. No. 3,760,578, which is a continuation of Ser. No. 388,417, Aug. 10, 1964, abandoned. This application Oct. 25, 1972, Ser. No. 300,466

Int. Cl. B60c *9/14*

U.S. Cl. 152—330 8 Claims

1. The method of producing a polycarbonamide reinforced non-flatspotting vehicle tire which comprises the steps of (1) providing a polycarbonamide tire cord having a total denier of 1,680 to 2,000 and having the yarns which make up the cord penetrated with an aliphatic organic, hydroxylated plasticizer, and in an amount sufficient to decrease the cord modulus of the cord to less than 75 percent of the untreated material, (2) subjecting said cord to sufficient tension to stretch said cord to prevent substantial loss of fiber orientation while heating said cord to a temperature of 100° to 160°C., (3) thereafter embedding said cord into rubber plies and (4) fabricating a rubber vehicle tire from said plies.

3,858,637

DEVICE FOR FITTING AND REMOVING A TIRE OF VEHICLE WHEELS

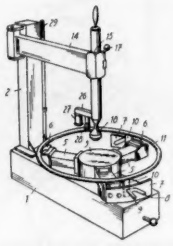
Victor Duquesne, Quellinstraat 42, 2000 Antwerpen, Belgium

Filed June 12, 1973, Ser. No. 369,149

Claims priority, application Belgium, June 16, 1972, 51975

Int. Cl. B60c *25/10*

U.S. Cl. 157—1.24 5 Claims



1. A device for fitting and removing a tire of a vehicle wheel comprising a frame, a horizontal table rotatably mounted on said frame, jaws connected to said table which can be displaced radially for gripping the wheel on said table, an arm being hinged to said frame in a horizontal plane above table, a rod with adjustable height fitted in said arm, a tool which is integral with said rod of adjustable height and is used for fitting and removing a tire, a pivot pin fitted to said tool and set at an angle with respect to the longitudinal axis of said rod, a conical guide roller fitted on said pivot pin and the conical side surface of which cooperates with the edge of the wheel to be handled, a support attached at right angles upon said rod with variable height and fitted at right angles with a guide roller for guiding the bead of the tire to be fitted, a ring upon which rests the tire; means mounting said ring on said table for moving said ring into a lower and into an upper position, in such a manner that in the lower position said table, jaws and means for moving said ring, are under the upper surface of said ring and inside the outer circumference of said ring.

3,858,638

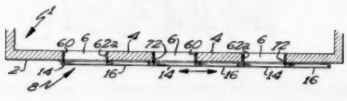
CLOSURE AND VENTILATING WALL STRUCTURE

Eldred E. Soeffker, 2805 Sycamore Ln. North, Minneapolis, Minn. 55427

Filed Sept. 17, 1973, Ser. No. 398,259

Int. Cl. E06b *3/32*

U.S. Cl. 160—102 13 Claims



1. A combined closure and ventilating wall structure comprising:

an upright wall comprised of a plurality of fixed, spaced apart solid wall sections defining therebetween a plurality of spaced apart openings separated by said solid wall sections;

a guide track attached to said upright wall above said openings in a direction coextensive with the longitudinal extent of said wall and said openings;

a shiftable panel unit suspended at its upper end by guide means engaging said track and shiftable back and forth thereon, the bottom end of said panel unit being normally free hanging, and said panel unit being comprised of alternate, aiar impervious, heat insulating panel sections

and air pervious ventilating panel sections joined together and shiftably movable back and forth together as a unitary assembly on said track between a first closed position in which said air impervious panel sections are aligned over said openings in closing relation thereto and a second, open position in which said ventilating panel sections are aligned over said openings;

weather stripping extending around the peripheral edge of each of said openings on the outer face of the portions of said wall sections defining said openings; and

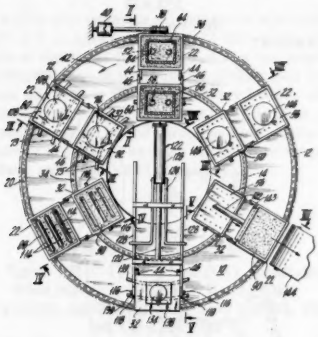
latch means attached to said solid wall sections inside of each of said openings on opposite sides thereof, and cooperating attachment means on opposite sides of each of said air impervious panel sections with which said latch means are releasably engageable in such a manner as to pull said air impervious panel sections inwardly with the periphery thereof against said weather stripping around said openings in tight, sealing engagement therewith.

3,858,639

APPARATUS FOR MAKING SAND MOLDS

Sam Larkin, 254 Beach 140th St., Belle Harbor, N.Y.

Filed June 20, 1973, Ser. No. 371,848
Int. Cl. B22c *11/04*
U.S. Cl. 164—194 **12 Claims**



1. An apparatus for making sand molds, comprising: frame means, support means rotatably mounted on said frame means, means for rotating said support means in a substantially horizontal plane to a plurality of substantially equally spaced stations about said frame means, at least one pair of first and second mold chamber means, pivot means interconnecting the first and second mold chamber means of each pair, said first mold chamber means of each pair being stationarily mounted on said support means, first means arranged at a first one of said stations for introducing mold sand into said mold chamber means, second means arranged at a second one of said stations for compressing the mold sand in said mold chamber means to form mold halves, third means arranged following said second means for pivoting one of said first and second mold chamber means of each pair about said pivot means from a first position next to said one mold chamber means to a second, inverted position above said one mold chamber means, and for returning the same to its first position, fourth means arranged at a third station for displacing the mold half in said other mold chamber means of each said pair into said one mold chamber means of each said pair while the other mold chamber means is above said one mold chamber means, and fifth means arranged at a fifth one of said stations for removing the two mold halves from said one mold chamber means of each said pair.

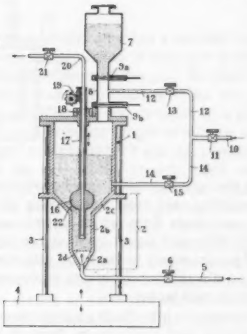
12. In an apparatus for making sand molds, mold chamber means comprising upstanding side walls, and a bottom wall extending substantially perpendicularly to said side walls, and plate means in said mold chamber means extending substantially parallel to said bottom wall and movable from adjacent said bottom wall along said side walls in substantially close contact therewith, said plate means being provided with a hollow chamber therein, a plurality of passages leading from said hollow chamber through said plate means into said mold chamber means, and conduit means leading from the exterior of said plate means into said hollow chamber, said conduit means being adapted to be connected to a source of fluid under pressure for introducing such fluid under pressure through said conduit means, hollow chamber and passages into said mold chamber means.

3,858,640

REINFORCED COMPOSITE ALLOYS, PROCESS AND APPARATUS FOR THE PRODUCTION THEREOF

Raymond Henri Sifferlen, Veurey-Voroize, France, assignor to Societe Industrielle De Combustible Nucleaire, Annecy, France

Filed June 8, 1973, Ser. No. 368,434
Claims priority, application France, June 9, 1972, 72.20864
Int. Cl. C22b *9/12*
U.S. Cl. 164—250 **15 Claims**



1. Apparatus for preparing a reinforced composite alloy, which comprises a crucible, means for supplying liquid basic metal to said crucible at a constant temperature and at a substantially constant level, means for causing rapid circulation of a gas, means for introducing particulate additions into said gas, means for imparting mechanical vibrations to said introducing means, means for ensuring the rapid displacement of said additions and said gas, means for simultaneously stirring said metal and introducing said additions into said metal during stirring, said last-named means being connected to said means for rapid displacement of said additions and said gas, means for stirring the dispersion thus obtained and preventing its sedimentation or decantation, and means for transferring the stirred mixture of basic metal and additions to another receptacle, said last-named means desorbing and degasing said mixture.

3,858,641

METAL CASTING IN THIN WALLED MOLDS

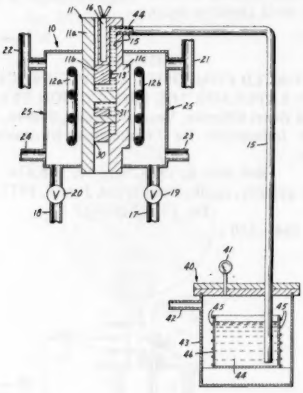
Russell B. Kirby, Jr., Baytown Township, Washington County, and Stephen C. Wing, Landfall, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 114,800, Feb. 12, 1971, Pat. No. 3,760,864. This application Apr. 23, 1973, Ser. No. 353,726
Int. Cl. B22d *27/04*
U.S. Cl. 164—251 **4 Claims**

1. An apparatus useful for continuously producing at a high production rate low porosity metal castings requiring little or no subsequent finishing, comprising, in combination,

a thin-walled, highly heat conductive multi-part mold means defining a mold cavity, said mold being formed of a metal having a thermal conductivity coefficient of at least 0.140 g cal/ (sec cm^2) (°C/cm), said mold being perforate to provide a narrow gate opening into said cavity through the wall of one of said mold parts rather than along an edge of said part,

a first heating means for rapidly heating said mold to a temperature capable of maintaining the casting metal in the mold in a molten state,



cooling means comprising liquid coolant and a liquid jacket surrounding said mold and having associated therewith inlet and drain lines which permit rapid filling of said jacket with said liquid coolant for rapidly cooling said mold progressively toward said gate opening from a point farthest distant therefrom and rapid removal of said coolant from said jacket, and

supply means for introducing a continuous supply of molten metal into said mold cavity through said gate opening under slight pressure.

3,858,642

APPARATUS FOR DELIVERING METAL TO A ROTATING CONTINUOUS CASTING DRUM

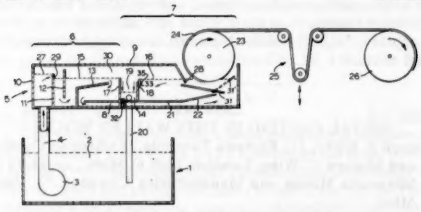
Louis Battiston, Rexdale, Ontario; Paul Niessen, Waterloo, Ontario; John R. Wellington, Mississauga, Ontario, and Thorpe E. Watson, Oakville, Ontario, all of Canada, assignors to Cominco Ltd., British Columbia, Canada

Filed June 5, 1973, Ser. No. 367,143

Claims priority, application Canada, Oct. 31, 1972, 155736

Int. Cl. B22d *11/06*

U.S. Cl. 164—276 **8 Claims**



1. Apparatus for delivery of a molten metal to and maintenance of a quiescent pool of said molten metal at the peripheral surface of a rotating drum dipping into said pool for casting of said metal onto the drum comprising a substantially rectangular trough, inlet means for introducing molten metal from a reservoir and outlet means for return of excess molten metal to said reservoir; said trough having a holding section and a casting section, first and second opposed, spaced-apart weirs mounted on adjacent internal walls of said holding and casting sections, and first weir adapted to discharge molten metal from the holding section and said second weir adapted to discharge molten metal from the casting section, means for adjusting the heights of said weirs relative to each other, a channel beneath said internal walls communicating with holding section with said casting section, baffle means disposed within said holding section to evenly distribute incoming molten metal across the holding section, a plate defining the upper face of said channel and extending into said casting section, the part of said plate that extends into said casting section being sloped upwardly, and an immersed baffle between said drum and said second weir, said weirs, internal walls, channel, baffle means, plate and immersed baffle extending transversely across the width of said trough.

3,858,643

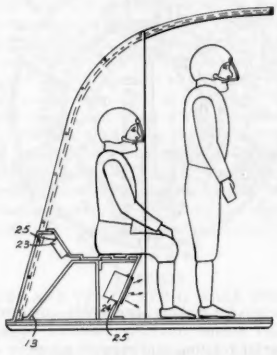
PERSONNEL SHELTER

David S. Reed, Huntington, W. Va., and John E. Cottrill, South Point, Ohio, assignors to Protect-O-Dome, Inc., Huntington, W. Va.

Division of Ser. No. 104,449, Jan. 6, 1971, Pat. No. 3,745,305, which is a continuation-in-part of Ser. No. 80,449, Oct. 13, 1970, abandoned. This application Apr. 17, 1973, Ser. No. 352,038

Int. Cl. F28f *7/00*

U.S. Cl. 165—47 **4 Claims**



1. A personnel shelter comprising a bench having a forward support portion, a seating portion and a raised back portion, a canopy extending upward from the upper surface of said raised back portion and curving above said bench, means for securing said canopy to said bench, a wall positioned at each end of said bench having one edge shaped to make a flush joint with said canopy and means attached to said bench for conditioning the air within the area defined by said canopy and said end walls, said means for conditioning the air including a fan and duct means communicating the output from said fan with said defined area for circulating the air within said sheltered area.

3,858,644

FAN SHROUD EXIT STRUCTURE

Harold D. Beck, Downers Grove, and Thomas L. Hanna, Villa Park, both of Ill., assignors to International Harvester Company, Chicago, Ill.

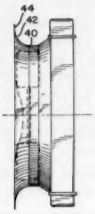
Filed Apr. 5, 1973, Ser. No. 348,437

Int. Cl. F28d *21/00*

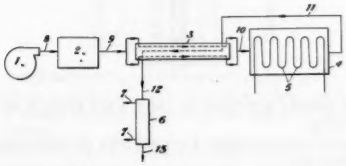
U.S. Cl. 165—51 **7 Claims**

1. A heat transfer system for an internal combustion engine comprising:

a heat exchange means having a front and rear section;
a shroud including a forward section arranged to enclose said rear section, and a rearwardly extending unitary contoured exit section including means defining a cylindrical throat, a radial expanding section and a radial flat portion;
a fan assembly including a plurality of fan blades having leading and trailing edges wherein the following relationship within plus or minus 12 percent of AW exists: RF = AW/3, CF = AW/3, and R = 2AW/3 where RF is the length of the radial flat portion, CF is the length of the cylindrical throat, R is the radius of the radial expanding section and AW is the projected axial width of the fan means wherein the improvement comprises: an interruption section means in said shroud exit means whereby the continuity is changed and the fan induced stream of air will have radial and axial components.

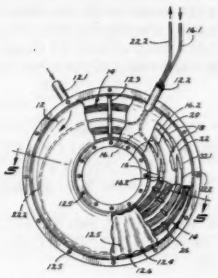


3,858,645
AIR STERILIZING PLANT
Hermann Egger, CH-1717 St. Ursen (FR), Switzerland
Filed Mar. 23, 1972, Ser. No. 237,261
Claims priority, application Italy, Apr. 1, 1971, 49461/71
Int. Cl. A23c *3/02*
U.S. Cl. 165—66 **6 Claims**



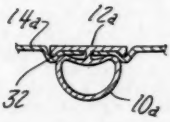
1. Apparatus for sterilizing air by the use of high temperature, comprising:
an air sterilizer, means to deliver air to said air sterilizer, and means to remove sterilized air from said air sterilizer;
said air sterilizer comprising means to destroy all micro-organisms in the air within said air sterilizer by providing an elevated temperature;
said means to destroy micro-organisms comprising a microporous metallic filter and heating means to heat said microporous filter and the air within said air sterilizer to a temperature of about 280°-300°C, said microporous filter being located downstream of said heating means; and
air cooling means downstream from said air sterilizer.

3,858,646
HEAT EXCHANGER
Harry E. Naylor, 2723 Hennepin Ave., Minneapolis, Minn. 55405
Filed May 28, 1974, Ser. No. 473,806
Int. Cl. F28f *9/26*
U.S. Cl. 165—145 **10 Claims**



1. A heat exchanger which comprises a toroidal shell having inlet and outlet ports for admission of a hot gas to the interior of the shell and for discharge of the gas, the shell having a transverse inner wall limiting revolution of the hot gas in the toroidal shell to a maximum of one revolution; a plurality of turns of at least one continuous length of tubing, the tubing turns being arranged in a plurality of spaced, annular bundles within and about the axis of the toroidal shell, the tubing passing from one bundle to another in each turn thereof about the toroidal axis and each turn of tubing in each bundle being spaced from adjacent turns of tubing; an annular support ring carried within the shell and supportively contacting the bundles with the latter being uniformly helically twisted about the support ring; means for flowing a gas to be heated into one end of the tubing; and means at the other end of the tubing for leading hot, expanded gas exteriorly of the shell.

3,858,647
HEAT EXCHANGER AND METHOD OF MANUFACTURE THEREFOR
Stephen L. Hickman, 1172 Glendale, and Carl O. Griewahn, 4886 S. Adrian Hwy., both of Adrian, Mich. 49221
Continuation-in-part of Ser. No. 344,245, March 23, 1973, Pat. No. 3,827,485. This application Aug. 10, 1973, Ser. No. 387,524
Int. Cl. F28f *1/32;* **B21d** *53/02;* **B23p** *15/26*
U.S. Cl. 165—171 **8 Claims**



1. A heat exchanger apparatus comprising: a tube having a substantially T-shaped integral attachment appendage, the interior surface of the top of said appendage having substantially pointed flanges formed therein, a plate having a through slot formed therein, and an offset along and adjacent said slot, said attachment appendage being disposed in said slot and offset and of such configuration as to provide a substantially flush surface on the side of the plate opposite the tube, the tube being compressed against the plate, said plate being mechanically deformed around said flanges to enhance the strength of the mechanical bond between the tube and the plate transversely of the tube, the combined unit being bent

into a closed compartmental form with the seam bonded to hold the unit in shape.

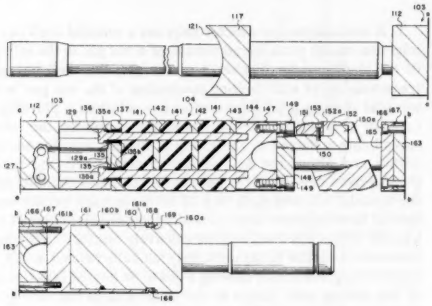
2. A method for assembling a tube having an external attachment appendage and a plate for thermal transfer between the tube and plate comprising the steps of extruding a metal tube having an integral attachment appendage along one side thereof with at least one substantially pointed flange formed in a surface thereof opposite the tube, forming at least one slot in and through the plate, sliding the appendage into the slot, and compressing the tube against the plate to mechanibond the plate and the tube, whereby the step of compressing tends to deform the plate locally around the flange to enhance the mechanical bond transversely of the tube.

3,858,648

DUAL STRING HYDRAULICALLY ACTUATED OIL WELL PACKER

Marion Barney Jett, Seagoville, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 2, 1973, Ser. No. 412,221
Int. Cl. E21b *23/06, 33/122*
U.S. Cl. 166—120 **10 Claims**



1. A dual string oil well packer comprising:

dual elongated tubular mandrels arranged in substantially parallel orientation, each having an integral independent bore passage extending therethrough:

upper body means attached to and encircling said mandrels;

a unitary tubular anchor slip encircling said dual mandrels and arranged on said mandrels in limited slidable and pivotable relationship;

said unitary slip having a plurality of teeth formed on diametrically opposite sides at opposite ends thereof, said teeth adapted to engage said grip the inner wall of the well casing; said anchor slip further having two sets of dual parallel bore passages therethrough each capable of receiving said mandrels, said one set of dual passages intersecting said other set at an angle of about five degrees up to about thirty-five degrees, whereby said anchor slip can be rotated from casing engaging position to non-engaging position on said mandrels;

packer means comprising a plurality of resilient annular packer elements and rigid containing means adjacent said resilient elements, said packer means encircling said mandrels in a partially slidable relationship thereon and arranged to abut said anchor slip;

hydraulic actuation means located on said mandrels and comprising piston means and cylinder means, said piston means slidably engaging said cylinder means, and said piston means and said cylinder means each containing inner annular differential pressure area surfaces arranged to communicate with post means through the wall of one of said mandrels; said differential pressure surfaces adapted to receive fluid pressure through said port means and force said piston means out of said cylinder means into abutment with said anchor slip thereby rotating said anchor slip and compressing said resilient packer elements into engagement with the well casing;

locking means on said mandrels for engaging said mandrel and maintaining said said anchor slip in said rotated position and said packer means in said compressed position;

shear means preselectively shearable to allow said anchor slip and said packer means to be released from said locking means at a predetermined desired time;

releasing means in said packer arranged to abut said rotated engaged anchor slip and selectively rotate said anchor slip out of the engagement with said well casing; and,

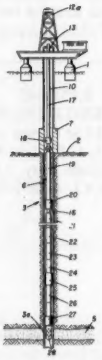
wherein said locking means further comprises a dual conical wedging collar slidably mounted on said mandrels and attached to said cylinder means, and a plurality of toothed wedge inserts located within said wedging collar between a conical inner wall in said collar and said mandrels, said inserts arranged to be wedged against said mandrels by the conical inner wall of said wedging collar to force the toothed portion of said inserts into engagement with the mandrels, said toothed portions having cammed teeth thereon arranged to allow said inserts to move in only one direction on said mandrels.

3,858,649

APPARATUS FOR TESTING OIL WELLS USING ANNULUS PRESSURE

Gary Q. Wray, and John C. Holden, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 335,980, Feb. 26, 1973, abandoned.
This application May 17, 1974, Ser. No. 471,119
Int. Cl. E21b *47/00*
U.S. Cl. 166—162 **22 Claims**



6. A sampler apparatus for use in a test string in an oil well comprising:

a power section having a central bore therethrough, which comprises;

a piston responsive to fluid pressure in the annulus exterior to the test string such that increases in said annulus pressure will move said piston in a first longitudinal direction,

means engaged with said piston for biasing said piston in order that said piston will move in a second longitudinal direction opposite to said first direction when said annulus pressure increases are removed,

means for supplementing said biasing means with hydrostatic pressure in the annulus as the apparatus is lowered into the well, and

means having an open position and a closed position for selectively isolating said supplementing means such that hydrostatic pressure in the annulus while said isolating means is in the open position will actuate said supplementing means, and increases in the annulus

pressure subsequent to the closing of said isolating means will move said piston in the first direction against said biasing means, and

a sampler section removably attached to said power section and having a central bore therethrough communicating with said central bore of said power section, which comprises;

means removably attached to said piston for transferring movements of said piston, and

two valves in said sampler section spaced apart to form a sample chamber therebetween, both valves being actuated by said movement transferring means to open when said piston moves in the first longitudinal direction thereby allowing formation fluid to flow through said central bores, and to close when said piston moves in the second longitudinal direction thereby trapping a sample of formation fluid in said sample chamber,

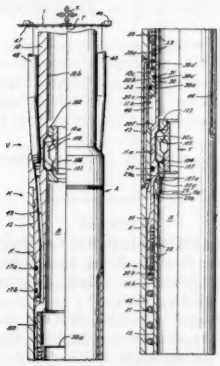
said valves further having a fail safe position wherein said valves are closed when the annulus pressure increases above a predetermined level thereby moving said piston and said valves by the action of said movement transferring means in the first longitudinal direction to a fail safe position.

3,858,650

OPERATOR APPARATUS

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Filed May 14, 1973, Ser. No. 359,686
Int. Cl. E21b *43/12*
U.S. Cl. 166—224 A **26 Claims**



1. An apparatus adapted for connecting in a well tubing at a subsurface location in a well to receive a flow control valve means movable through the bore of the tubing to the apparatus, including:

a housing having a bore therethrough and adapted for connecting in the well tubing with said bore communicating with the bore of the tubing;

an operator member mounted with said housing and movable to and from a first position and a second position relative to said housing for a received flow control valve means to effect opening and closing operation of the flow control valve means for blocking flow through the bore of the tubing when said operator is in the first position and for enabling flow through the bore of the tubing when said operator is in the second position;

first control means associated with said operator member independently of the well tubing for moving said operator to the second position for enabling flow through the bore of the tubing in response to a signal carried by said first control means; and

second control means associated with said operator member independently of the well tubing for moving said operator to the second position for enabling flow through the bore of the tubing in response to a signal carried by said second control means wherein either said first or said second control means moves said operator to operate the flow control valve means to enable flow through said bore.

3,858,651

WELL INSTRUMENT POSITIONING DEVICE

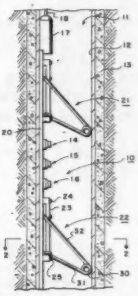
Piero Wolk, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 19, 1973, Ser. No. 426,147
Int. Cl. E21b *17/10*
U.S. Cl. 166—241 **7 Claims**

1. An apparatus for positioning a well instrument in a well, comprising:

a U-shaped member mounted on said well instrument, said member and said instrument defining an elongated groove; and

a helical torsion spring having first and second arms attached to the opposite ends of said spring, respectively, said arms each having an L-shaped outer extremity, each



of said L-shaped extremities being slideably moveable within said groove.

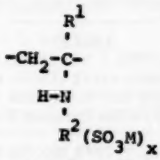
3,858,652

MOBILITY CONTROL IN LOW PERMEABILITY RESERVOIRS

John S. Rhudy, and Bruce L. Knight, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed May 14, 1973, Ser. No. 359,939
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **15 Claims**

1. In a process of recovering hydrocarbon from a hydrocarbon-containing substerranean reservoir having an average permeability less than about 75 md and having an injection means in fluid communication with a production means and wherein an aqueous polymer solution is injected to recover hydrocarbon therethrough, the improvement comprising using as the aqueous polymer solution a solution comprised of a polymer containing at least 5 percent by weight of repeating units of the formula:



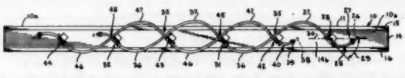
wherein R^1 is hydrogen or a lower alkyl or substituted lower alkyl radical, R^2 is a hydrocarbon or substituted hydrocarbon radical, M ia hydrogen or one equivalent of a cation, and x is 1 or 2.

3,858,653

WELL BORE WALL CLEANER

Charles W. Turbyfill, P.O. Box 490, Marshall, Tex. 75670

Filed Aug. 27, 1973, Ser. No. 391,930
Int. Cl. E21b *37/02*
U.S. Cl. 166—173 6 Claims



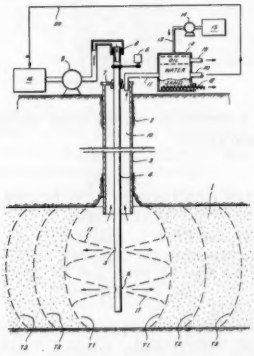
1. A well bore wall cleaner for mounting on a tubular member comprising:
   a. a body;
   b. a plurality of first helical cable loops mounted on said body so that a portion of each loop faces in one direction and the other loop portion faces in an opposte direction;
   c. a plurality of second helical cable loops mounted on said body so that a portion of each loop faces in one direction and the other loop portion faces in an opposite direction, said first and second helical cable loops being offset on said body to overlap each other, whereby the overlapping loops generally form a figure 8 in plan view; and
   d. means for mounting said body on a tubular member.

3,858,654

HYDRAULIC MINING TECHNIQUE FOR RECOVERING BITUMEN FROM SUBSURFACE TAR SAND DEPOSITS

Clarence O. Walker, Richmond, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 18, 1973, Ser. No. 371,204
Int. Cl. E21b *43/24*, *47/00*
U.S. Cl. 166—250 25 Claims



1. A method for recovering bitumen from a subterranean tar sand deposit having injection means and production means comprising:
   contacting the tar sand deposits with an aqueous solution comprising an inorganic polyphosphate substance plus an alkalinity agent, the temperature of said solution being at least as great as the temperature of the tar sand deposit.

3,858,655

TREATING A SUBTERRANEAN HYDROCARBON-CONTAINING FORMATION

Charles J. Engle, and Paul R. Prentice, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 7, 1973, Ser. No. 386,352
Int. Cl. E21b *43/25*
U.S. Cl. 166—305 R 20 Claims

1. A method for cleaning a porous subterranean hydrocarbon-containing formation penetrated by at least one well bore, which method comprises, in combination, the steps of:
   a. passing through said well bore and into said formation a hydrocarbon solvent capable of washing at least a portion of said contained in-place hydrocarbon from a preselected portion of said formation desired to be treated;
   b. thereafter passing through said well bore and into said portion of said formation an oxidizing agent capable of increasing the water wettability of said portion of said formation; and
   c. thereafter passing through said well bore and into said portion of said formation a reducing agent capable of reacting with sand removing residual oxidizing agent and/or oxygen from said portion of said formation.

3,858,656

OIL RECOVERY PROCESS USABLE IN FORMATIONS CONTAINING WATER HAVING HIGH CONCENTRATIONS OF POLYVALENT IONS

Kenoth H. Flournoy; Jim Maddox, Jr., and Jack F. Tate, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,176
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 23 Claims

1. In a method for recovering petroleum from a subterranean formation penetrated by at least one injection well and at least one production well, said formation containing water having polyvalent ions dissolved therein in a concentration of from about 200 to about 18,000 parts per million, said recovery method being of the type wherein an aqueous fluid is injected into the formation via the injection well, and oil displaced by the injected fluid is recovered from the formation via the production well, wherein the improvement comprises injecting into the formation an aqueous surfactant solution comprising:
   a. a surfactant with an average molecular weight not to exceed about 360 selected from the group consisting of water soluble salts of alkyl sulfonates having from five to 25 carbon atoms, and water soluble salts of alkylaryl sulfonates wherein the alkyl chains have from five to 25 carbon atoms.
   b. a sulfonated oxyalkylated surfactant containing alkylaryl groups.

3,858,657

WELL STIMULATION WITH POLYAMINE SOLUTIONS

Gerald W. Haws, Denver; Bruce L. Knight, and John S. Rhudy, both of Littleton, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 208,460, Dec. 15, 1971, abandoned. This application Nov. 26, 1973, Ser. No. 419,020
Int. Cl. E21b *43/16*, *43/25*
U.S. Cl. 166—305 R 14 Claims

1. A process for increasing the injectivity index of an injection means in fluid communication with an oil-bearing subterranean formation containing high molecular weight polyacrylamide(s) and/or derivatives(s) thereof in the immediate vicinity of the formation in fluid communication with the injection means, the process comprising contacting the formation with an aqeuous solution comprised of about 100 to about 30,000 ppm of polyamine and thereafter continuing normal operation of the injection means.

3,858,658

HYDRAULIC FRACTURING METHOD FOR LOW PERMEABILITY FORMATIONS

Malcolm K. Strubhar, Irving; John L. Fitch, and Edwin E. Glenn, Jr., both of Dallas, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,438
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 6 Claims

1. A method of forming a vertical fracture in a thick subterranean formation having a preferred vertical fracture orienta-

tion from a well penetrating said formation, comprising the steps of:

injecting fracturing fluid in a single stage via said well into said formation at a pressure sufficient to form and propagate a vertical fracture into said formation, said fracturing fluid being injected at a rate no greater than about 0.5 barrel per minute per foot of formation, and being comprised of a liquid having an apparent viscosity of less than about 100 centipoises and containing a proppant in an amount no greater than about four pounds per gallon; and

continuing to inject said fracturing fluid via said well into said formation until at least 330,000 gallons of said fracturing fluid are injected thereinto.

3,858,659

FIRE EXTINGUISHER APPARATUS

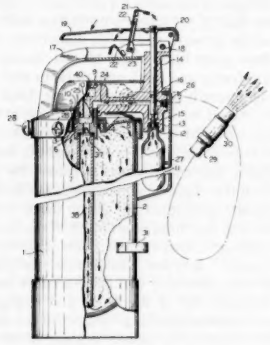
Yasuichi Fukushima, Osaka, Japan, assignor to Hatsuta Manufacturing Co., Ltd., Osaka-fu, Japan

Filed Aug. 24, 1973, Ser. No. 391,486

Claims priority, application Japan, Sept. 25, 1972, 47-96484

Int. Cl. A62c *13/40*

U.S. Cl. 169—77 **5 Claims**



1. A fire extinguisher device comprising a cylindrical housing and a nozzle connected to said housing, said housing having means to accommodate in the inside thereof a sealed cassette tank containing a fire-extinguishing agent, means for air-tightly sealing a cassette tank to said housing, said housing having means for air-tightly securing thereto a high pressure gas cartridge sealed by a seal, a first passage communicating between said means for securing said gas cartridge and the inside of said housing at a position which would be adjacent one end of a cassette tank when located therein, a second passage communicating between the inside of said housing adjacent a cassette tank when located therein and said nozzle, a breaker lever means mounted within said first passage and selectively movable for breaking said seal on said gas cartridge and for causing highly pressurized gas from said cartridge to flow through said first passage into a cassette tank when located in said housing to stir the fire-extinguishing agent therein and to force the same through said second passage and out said nozzle.

3,858,660

FEED CONVEYOR APPARATUS

William F. Wadsworth, 402 W. McPherson Hwy., Clyde, Ohio 43410

Filed Sept. 14, 1972, Ser. No. 288,912

Int. Cl. A01d *25/04*

U.S. Cl. 171—57 **9 Claims**

1. A feed roller, comprising

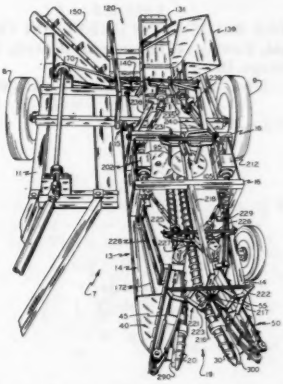
a. a longitudinally extending tubular body,

b. spiral rib means extending around and along the outer surface of said tubular body,

c. means for decreasing the effective diameter of the feed roller from a first diameter intermediate the forward and rear ends of said tubular body to a second smaller diameter at said rear end, and

d. means for increasing the effective diameter of the feed roller from a third diameter, which is smaller than said second intermediate diameter and is located toward the front end of said tubular body, to said first intermediate diameter,

e. said effective diameter increasing and decreasing means including strap means formed into a helical coil having the same pitch as and interposed between said spiral rib means on said tubular body,



f. the thickness of said strap means increasing from a first smaller thickness to a second intermediate thickness larger than said first thickness, and then decreasing from said second thickness to a third thickness which is smaller than said second thickness.

3,858,661

MOTOR GRADERS

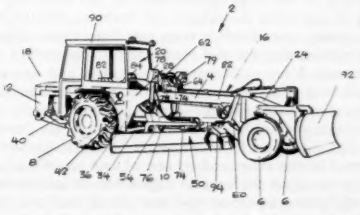
Edwin Carey Hallam, and Heather Hallam, both of Westerby, England, assignors to E. C. Hallam and Company, Smeeton, Westerby, England

Filed Oct. 25, 1972, Ser. No. 300,800

Claims priority, application Great Britain, Nov. 5, 1971, 51454/71

Int. Cl. C02f *3/76*

U.S. Cl. 172—1 **5 Claims**



1. A method of making a motor grader, which method comprises: constructing a first structural frame portion having a longitudinally extending beam adapted to mount adjacent a front end thereof an axle and steerable wheels and adapted to carry a grader blade in between said front end and a rear end of said beam; constructing a second structural frame portion by dismantling a self-supported operative tractor which is drivable in opposite directions at similar speeds by means of

drivable rear wheels, and has a front axle and steerable front wheels and a driver's station having a steering mechanism operatively connected to the steerable front wheels by removing therefrom the front axle, front wheels and associated steering equipment including the connection of the said steering mechanism and the steering wheels, assembling said first and second structural portions together to provide a rigid connection therebetween with the rear of said tractor connecting to the rear end of the beam, mounting an axle and steerable front wheels adjacent the front end of the beam and a grader blade underneath the frame with a forward operative side of the grader blade facing the steerable front wheels and operatively connecting a steering mechanism at the driver's station to the steerable wheels at the front end of the beam.

3,858,662

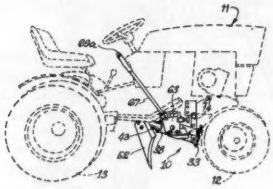
GRADER BLADE ATTACHMENT FOR TRACTOR

Jay H. Reid, Barrington, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Nov. 15, 1973, Ser. No. 416,007

Int. Cl. A01b *59/044*

U.S. Cl. 172—297 **1 Claim**



1. A grader blade attachement for a vehicle having side frame members supported on front and rear wheels, said attachment comprising a pair of spaced upright members adapted for securement to said vehicle side frame members intermediate said front and rear wheels and extending below said side frame members, a sub-assembly including a generally U-shaped structure having a transverse member and a pair of parallel legs, said legs being pivotally connected to the lower portions of respective upright members, an outer tubular member fixed to said transverse member intermediate said legs and extending parallel to said legs, bracing members connected to said transverse member and said outer tubular member, one of said bracing members having a series of linearly arranged openings, an inner tubular member rotatably supported in said outer tubular member, said inner tubular member having end portions extending beyond the ends of said outer tubular member, a grader blade pivotally mounted on one end of said inner tubular member and extending transversely of and below the vehicle side frame members between the front and rear wheels, a lever arm fixed to the other end of said tubular member and extending radially thereof, screw means carried on said transverse member and operatively engaged with said lever arm for rocking said inner tubular member about its longitudinal axis to adjust the angular disposition of said grader blade in a vertical plane, a link connected at one end to said grader blade and being adjustably slectively connected at the other end to one of said linearly arranged openings to adjust the angular disposition of said blade in a horizontal plane, a pair of rigid arms, each fixed to a respective upright member, a shaft journaled in said rigid arms, a lever fixed to said shaft and carrying a detent, a plate fixed to one of said rigid arms and having a series of arcuately arranged recesses to receive said detent, a pair of lever arms rigid with said shaft, link members connecting said lever arms with the legs of said U-shaped assembly, said lever being manually operative to rock said subassembly to move said grader blade vertically to one of a plurality of positions of operation.

3,858,663

TRACTOR MOUNTED UTILITY GRADER BLADE

Fred W. Lurwig, Jr., Marion Junction, Ala., assignor to Allied Products Corporation

Filed Apr. 26, 1973, Ser. No. 354,905

Int. Cl. A01b *59/043*

U.S. Cl. 172—447 **14 Claims**

1. An implement assembly for connection with a three point hitch on the rear of a tractor comprising a main frame, a hitch assembly at the forward end of the main frame for connection with the three point hitch of the tractor, means interconnecting the main frame and hitch assembly, to shift and swing the main frame laterally in relation to the hitch assembly, an implement, means mounting the implement at the rear of the main frame for adjustable movement about a vertical axis, adjustable movement about a fore-and-aft longitudinal axis and adjustable movement about a transverse axis to enable adjustment of the implement, said hitch assembly including an arcuate transverse member, means on the arcuate member for connection with the three point hitch of the tractor, said main frame including a longitudinal beam extending rearwardly from the arcuate member, said means connecting the main frame and hitch assembly including arcuate shoes connected with the forward end of the beam and engageable with the forward and rearward arcuate surfaces of the arcuate member enabling the beam to be moved laterally of the arcuate member to offset the implement in relation to the tractor.

3,858,664

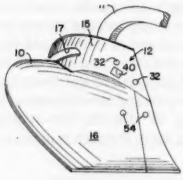
UNIVERSAL TRASHBOARD FOR MOLDBOARD PLOWS

Bernard F. Whalen, and Harry G. Yetter, both of Colchester, Ill. 62326

Filed Apr. 16, 1973, Ser. No. 351,326

Int. Cl. A01b *15/10*

U.S. Cl. 172—759 **4 Claims**



1. A trashboard for attachment to a moldboard plow by fastenings extending through a base attaching portion of the trashboard for securement to the moldboard of the plow, a plurality of openings through said base attaching portion, and a first removable plug in each of said openings, at least one of said first plugs having a hole for the passage of a fastening therethrough, said one first plug being interchangeable with a second plug having a hole located on a center different from the center of the first named hole in said one first plug, at least

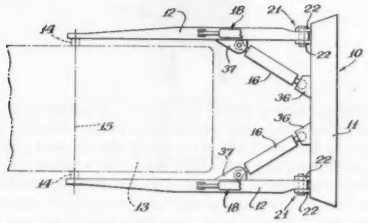
certain of said openings being rectangular and having a shoulder about the opening and a rectangular plug in said opening having a complemental shoulder engaged with said shoulder in the opening to dispose the plug flush with a face of said trashboard.

3,858,665

BULLDOZER FRAME WITH STRUT STRESS LIMITER

Bernard L. Winker, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 30, 1973, Ser. No. 355,824
Int. Cl. E02f *3/76*
U.S. Cl. 172—803 **14 Claims**



1. In an assembly comprising a bulldozer blade, a push arm having its front end connected to one end portion of the bulldozer blade, and a power unit connecting the push arm with the said one end portion of the bulldozer blade for tilting the same, an improved arrangement of the bulldozer blade and the push arm, in combination with a diagonal strut connecting regions of the push arm and the bulldozer blade spaced from said end of the push arm and said one end portion of the bulldozer blade and having spring means incorporated therein that deflects under compression loading so as to shorten the diagonal strut, the deflection being in proportion to load up to a certain point, thence occurring in amount about at constant load to another point, and thence occurring in still further amount in proportion to load, the spring means being preloaded up to about the said certain point even with the diagonal strut disconnected from the push arm and the bulldozer blade, shortening of the strut by decrease of the angle between the push arm and the bulldozer blade due to tilting of the bulldozer blade being accompanied by compressive deflection of the spring means without increase in loading between the said certain point and the said other point, and a similar arrangement at the other end portion of the bulldozer blade.

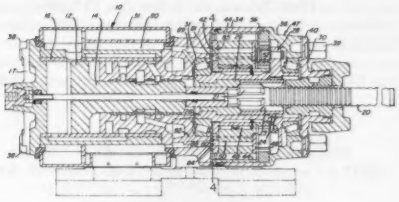
3,858,666

CONTINUOUS ROTATION ROCK DRILL

Edward A. Bailey, R.F.D. No. 2, Box 37, Newport, N.H. 03773; Walter D. Fish, 14 Highlandview Rd., Claremont, N.H. 03743, and Rene Pertusio, P.O. Box 757, Goshen, N.H. 03752

Filed Sept. 28, 1972, Ser. No. 293,093
Int. Cl. B25d *9/00*
U.S. Cl. 173—59 **9 Claims**

1. A pressure fluid actuated rock drill comprising: an elongated cylinder body; a piston member reciprocable in said cylinder body along the central longitudinal axis of said body; passageway means adapted to be connected to a fluid pressure source to supply fluid under pressure to reciprocate said piston member in said body; an elongated striking bar slidably rotatably mounted in said body and coaxial therewith to receive blows from said piston; a fluid operated reversible drill rotation motor symmetrical about said axis and in driving communication with a striking bar chuck driver for the selective rotation of said striking bar in opposite directions about the longitudinal axis thereof; and speed reduction gear means including a set of planetary gears coaxial with said rotation



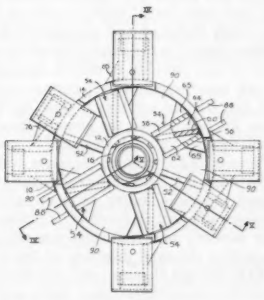
motor and in driving engagement between said rotation motor and said chuck driver.

3,858,667

BIG HOLE CUTTER

Robert D. Goodfellow, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Nov. 1, 1973, Ser. No. 411,743
Int. Cl. E21c *23/00*
U.S. Cl. 175—53 **15 Claims**



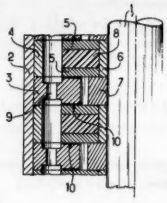
14. In a big hole cutter, especially for raise drilling and box hole drilling operations; a base structure adapted for rotation on a central axis, supports for rolling cutter devices mounted on the side of said base structure which faces the formation to be reduced and extending generally radially outwardly from said axis, and means on the axis of said base structure for connection of drill string means thereto for rotating said base structure while thrusting said base structure axially toward the side on which said rolling cutter supports are mounted, said base structure having axial channels there-through for the passage of debris taken by cutters on said supports, a tubular structure connected to the side of said base structure opposite said rolling cutter supports and coaxial with the base structure, and circumferentially and axially distributed support means on the outside of said tubular structure for receiving stabilizer rollers having the radially outermost regions in substantial axial alignment with the radially outermost regions of the rolling cutters mounted in the radially outer positions on said base structure.

3,858,668

STOP ARRANGEMENT FOR DRILL TURBINES

Jean Bell, La Tronche, France, assignor to Societe Generale de Constuctions Electrique et Mecaniques (ALSTHOM), Paris, France

Filed Oct. 16, 1972, Ser. No. 297,840
Claims priority, application France, Oct. 15, 1971, 71.37947
Int. Cl. E21b *3/12*
U.S. Cl. 175—107 **2 Claims**



1. A stop arrangement for turbine drills comprising: a turbine drill body, a turbine drill, a shaft for driving the drill, a plurality of fixed friction elements mounted on the body of said turbine drill, means for maintaining a predetermined distance between said fixed friction elements, a plurality of mobile friction elements mounted on the drill shaft, the faces of the elements in the axial direction of the drill shaft in one of said plurality of friction elements being positioned as friction parts on the cooperating faces of the adjacent elements of the other of said plurality of friction elements, characterized in that each element of said plurality of fixed friction elements is rigidly mounted and provided with at least two friction surfaces spaced in the axial direction of the drill shaft, each element of said plurality of mobile elements being provided with only one friction surface cooperating with one of said at least two friction surfaces of said fixed friction elements, means for distributing the stresses from one friction surface of all rigidly mounted elements to the cooperating friction surfaces of the associated elements and for damping the shocks between the rigid surfaces of said elements, said last mentioned means including resilient annular elements disposed between adjacent elements of said plurality of mobile elements for movably and resiliently mounting the friction surfaces thereof in the axial direction of the drill shaft said plurality of fixed friction elements and said plurality of mobile friction elements consisting of steel discs with the friction surfaces thereof treated to give an appropriate hardness, and means provided in said plurality of fixed friction elements for permitting the flow of fluid to the turbine drill.

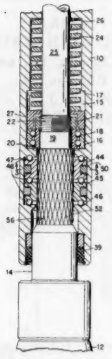
3,858,669

DRILLING APPARATUS

John D. Jeter, Midland, Tex., assignor to Texas Dynamatics, Inc., Dallas, Tex.

Filed Oct. 4, 1973, Ser. No. 403,519
Int. Cl. E21b *17/00*
U.S. Cl. 175—322 **7 Claims**

5. Apparatus for driving a drill bit comprising a housing, a mandrel having a portion extending into the housing and a portion extending out of the housing for connecting to a drill bit to rotate the bit with the mandrel and to transmit a downward force imposed on the mandrel to the bit, resilient means located in the housing to transmit any downward force on the housing to the mandrel while allowing the mandrel to reciprocate axially relative to the housing due to vibrations produced by a bit as it is urged against the bottom of a well bore by a downward force, and means carried by the housing and the mandrel to transmit the rotation of the housing to the mandrel and to cause relative rotation of the mandrel and the housing in the direction the mandrel is rotated by the housing as the mandrel reciprocates axially in the housing due to vibration of the bit to increase the speed of rotation of the bit relative to the housing.

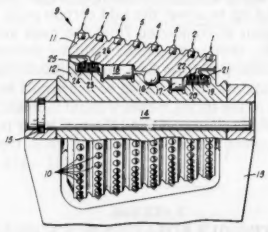


3,858,670

INSERT CUTTER FOR CUTTING KERFS

Eugene Gray Ott, 916 Greencastle, and William Michael Conn, 918 Glen Oaks Blvd., both of Dallas, Tex. 75232

Continuation-in-part of Ser. No. 251,607, May 8, 1972, abandoned. This application Aug. 20, 1973, Ser. No. 389,742
Int. Cl. E21b *9/10, 9/36;* **E21c** *13/01, 13/02*
U.S. Cl. 175—374 **15 Claims**

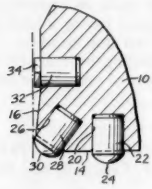


6. An earth boring cutter that functions to form at least one kerf in the formations being bored, comprising:

a cutter body, said cutter body having an annular cutter body surface; and

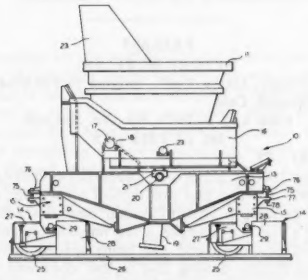
at least one annular row of solid inserts projecting from said cutter body for forming a kerf in the formation being bored, said inserts having a cylindrical body portion extending into said cutter body below said annular cutter body surface, a head portion extending substantially above said annular cutter body surface, a leading flank, a trailing flank, an inner flank and an outer flank, with said leading flank and trailing flank being substantially parallel and said inner and outer flanks susbstantially meeting to form a formation contacting surface with said formation contacting surfaces being in a common plane.

3,858,671
EXCAVATING TOOL
John F. Kita, Bedford, and David C. Johnstone, Claysburg RD, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.
Filed Apr. 23, 1973, Ser. No. 353,357
Int. Cl. E21c *13/00*
U.S. Cl. 175—410 **7 Claims**



1. In a mining bit; a bit body having a working face at the front end and a peripheral wall extending rearwardly from said working face, inserts mounted in the front end of said body and distributed over said working face and protruding axially therefrom, at least one row of gauge inserts mounted in the front end of said body near the juncture of said working face and said peripheral wall and extending angularly from the body so as to protrude radially outwardly beyond said peripheral wall and axially outwardly beyond said front end, and at least one row of further inserts extending radially into the peripheral wall of said body in circumferentially spaced relation and spaced axially along said peripheral wall from said gauge inserts, each said further insert having a radially extending sharp cutting edge on each of the axially upwardly and axially downwardly facing sides thereof, the radially outer end of each said further insert being disposed radially inwardly from the cylindrical envelope of the radially outermost points on said gauge inserts a fraction of the amount which the gauge inserts protrude radially beyond said peripheral wall.

3,858,672
WEIGH SYSTEM FOR TRANSFER CAR
John W. Mrozek, and Bernd Albers, both of New Castle, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.
Filed Dec. 26, 1973, Ser. No. 428,017
Int. Cl. G01g *19/08, 23/06*
U.S. Cl. 177—136 **17 Claims**

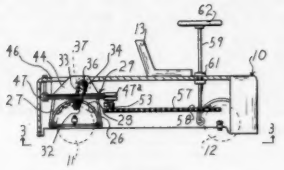


1. Transfer means for supporting and transporting a container of material and including frame means for supporting said container,

a plurality of spaced apart roller means, at least one weighing means mounted on each of said roller means for measuring the weight of said container and the material therein, frame means being mounted on said weighing means,

a plurality of coupling means for coupling said frame means to said roller means, said coupling means being generally flexible in a generally vertical direction and relatively non-flexible in a generally horizontal direction for preventing horizontal translation between said roller means and said frame means while transmitting the weight of said frame means and the container supported thereon at least partially to said weighing means.

3,858,673
VEHICLE HAVING SPHERICAL SUPPORTS
Albert E. Browning, Route 4, Box 425, Winnsboro, La. 71295
Filed Oct. 1, 1973, Ser. No. 402,072
Int. Cl. B62d *57/00, 61/06*
U.S. Cl. 180—26 R **4 Claims**



1. A vehicle comprising:

a. a supporting frame,

b. a plurality of spherical support members for said frame,

c. a pair of lower rollers carried by said frame for each said spherical support member engaging opposite sides of said spherical support member below the center thereof and adapted for rotation about horizontal axes parallel to each other,

d. upper, spaced apart rollers carried by said frame and engaging each said spherical support member above the center thereof and adapted for rotation about horizontal axes parallel to each other and parallel to the axes of rotation of said lower rollers so that each said spherical support member is adapted for rotation within the confines of said lower rollers and said upper rollers about an axis parallel to the axes of rotation of said lower rollers and said upper rollers,

e. laterally disposed rollers carried by said frame in position to engage the sides of each said spherical support member to limit lateral movement thereof,

f. one of said spherical support members being driven by at least one of said upper rollers which is operatively connected to a power unit,

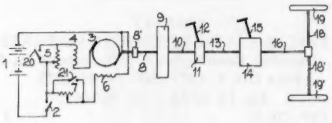
g. said upper and lower rollers and said laterally disposed rollers for said one spherical support member being carried by a rotatable frame mounted for horizontal rotation in said supporting frame about a vertical axis with said drive roller being the rearmost one of said upper rollers, as viewed in the direction of travel of the vehicle, and

h. a brake pad carried by said rotatable frame in position to engage said one spherical member upon sudden cessation of rotation of said drive roller.

3,858,674
ELECTRIC MOTOR-FLYWHEEL DRIVE SYSTEM
Harry Zvi Tabor, 13 Hameyasdim St., Jerusalem, Israel
Filed Oct. 16, 1972, Ser. No. 297,952
Claims priority, application Israel, Oct. 21, 1971, 37992
Int. Cl. B60k *21/08*
U.S. Cl. 180—65 R **11 Claims**

1. A variable-speed electric drive system for load devices of high inertia, comprising: an electric motor drive including a stator, a rotor, and an output shaft directly coupled to said

rotor through a fixed-ratio transmission; a flywheel directly coupled to said output shaft; a bi-directional variable torque converter coupling said flywheel to the load device for varying the ratio of the output speed and torque to the load device with respect to the input speed and torque from the flywheel, the electric motor drive being of variable-speed and having a self-regulation which is substantially matched to the speed regulation of the flywheel, the rated no-load speed of said motor drive being substantially equal to the maximum design



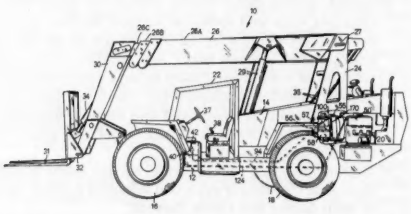
speed of the flywheel, and the rated full-load speed of the motor drive being less than about 70 percent of the rated no-load speed of the motor drive; and means for continuously varying said ratio of the torque converter for controlling the acceleration of the drive system, the acceleration of the drive system thereby depending only on the ratio of the torque converter and not on the power produced by the electric motor drive, whereby a wide variation of speed is permitted without overloading the electric motor.

3,858,675

SELF-PROPELLED VEHICLE HAVING COMBINED DIRECTIONAL AND ACCELERATION PEDAL CONTROL

Warren P. Geis, Port Washington, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed June 11, 1973, Ser. No. 369,010
Int. Cl. B60k *17/10*
U.S. Cl. 180—66 R **4 Claims**



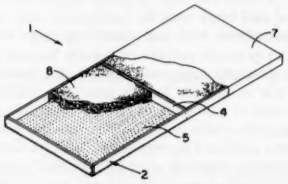
1. In a self-propelled vehicle:
ground wheels;
a hydraulic motor for driving at least one of said ground wheels;
first hydraulic pump means for supplying fluid to said motor;
propulsion means for driving said first pump means;
pump control means for said first pump means and including a first member movable to control the direction and speed of rotation of said motor and of said ground wheels; speed control means including a second member movable to regulate the speed of said propulsion means and of said first pump means;
a shuttle pedal pivotably movable in opposite directions about a first axis to control the direction and speed of rotation of said motor and said ground wheels, said shuttle pedal comprising two portions located on opposite sides of said axis;
a pump control lever arm connected to and movable with said shuttle pedal;
means for connecting said pump control lever arm to said first member of said pump control means to effect operation thereof in response to movement of said shuttle pedal;
a rotatable shaft disposed transverse said first axis;
a throttle control lever arm connected to and rotatable with said shaft;
means for connecting said throttle control lever arm to said second member of said speed control means;
a stop member projecting from the periphery of said shaft;
a pair of independently movable sleeves rotatably mounted on said shaft on opposite sides of said stop member, each sleeve having a lever arm and a portion engageable with said stop member;
and means for connecting the lever arm on each sleeve with one of said portions of said shuttle pedal.

3,858,676

SOUND ABSORBING PANEL

Philip H. Le Masurier, Candlehill Rd., New Fairfield, Conn. 06810

Continuation-in-part of Ser. No. 326,221, Jan. 22, 1973, abandoned. This application Oct. 5, 1973, Ser. No. 403,968
Int. Cl. E04b *1/84*
U.S. Cl. 181—33 G **9 Claims**



1. A thin sound-absorbing panel for use on walls or as a partition or the like comprising a rigid frame
a perforated backing selecting from the group consisting of hardboard or perforated metal attached to and covering one side of said frame;
a heavy textile having a SFR of from 300 to 1,800 MKS rayls attached to and covering the other side of said frame;
fiberglass substantially filling the space between said textile and said backing;
said panel having a thickness in the range from about 1 inch to about 2 inches and a sound absorption coefficient as determined by ASTM C **423-66** of at least about 0.90 at at least three of the **1/3** active test frequency bands between and including 250 Hz and 4 Kilohertz.

3,858,677

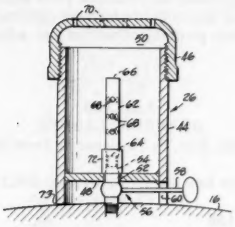
RETORT MUFFLER

Robert J. Bussey, Alamo, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed Aug. 9, 1973, Ser. No. 386,969
Int. Cl. F01n *1/16*
U.S. Cl. 181—45 **1 Claim**

1. A retort muffler comprising a generally cylindrical hollow body portion defining first and second open ends, said first open end defining a circumferential base rim adapted for contacting a mounting surface, a first imperforate end closure closing said first open end and being spaced therefrom, a second end closure closing said second open end, so as to define a chamber within said body, said second end closure comprising a cup-shaped cap threadedly secured to said body, a single aperture in said first end closure, a generally cylindrical, hollow elongated diffuser member defining inner and outer open ends extending through said aperture and into said chamber, said inner end of said diffuser being spaced from said second end closure means closing said inner end of said

diffuser, means defining a plurality of holes in said diffuser member, said plurality of holes in said diffuser member being spaced along said diffuser member, means defining a plurality of holes equally spaced around a hole circle of constant diameter in said second end closure, said plurality of holes in said second end closure being un-obturated so as to intercommunicate said chamber with the exterior of said body portion and thereby to the atmosphere, a valve having an elongated stem substantially included between said first end closure and said first open end, an elongated slot in said body between said end closure and said first open end, and wherein said valve includes an alongated valve stem extending through said slot.



3,858,678

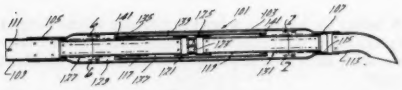
MUFFLER WITH ROTARY GAS FLOW

Ralph J. Haren, Jackson, Mich., assignor to Tenneco Inc., Racine, Wis.

Filed Nov. 8, 1972, Ser. No. 304,770

Int. Cl. FO1n *1/08*

U.S. Cl. 181—55 **6 Claims**



1. A muffler for attenuating sound in flowing gas comprising an outer shell having an inlet at one end and an outlet at the outer end, a tubular gas flow member within said shell and connected to said inlet and outlet, the space between said member and shell forming a gas flow chamber, said tubular member containing a flow obstructing means at a central portion thereof, said tubular member having a first patch of louvers located on the inlet side of said obstructing means and a second patch of louvers located on the outlet side of said obstructing means, said chamber extending between and connecting said louver patches, the louvers in each of said patches opening on the exterior of the tubular member and all the openings in each patch facing in one tangential direction with respect to the length of the tubular member, all the louvers in the first patch facing in the opposite tangential direction to all the louvers in the second patch to provide gas flow directing means for rotating the gas in substantially one direction only as it flows into and out of said chamber and as it moves longitudinally through the chamber from the first patch of louvers to the second patch of louvers.

3,858,679

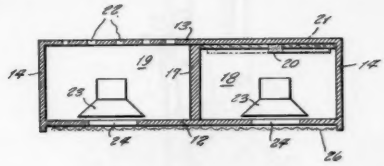
LOUDSPEAKER SYSTEM WHICH PRODUCES STEREO-IKE SOUNDS

Jack Askins, 210 Hudson St., Room 6, Hoboken, N.J. 07030

Filed Nov. 15, 1973, Ser. No. 416,242

Int. Cl. H04r *1/28;* **G10k** *13/00*

U.S. Cl. 181—145 **3 Claims**



1. In a loudspeaker system which produces stereo-like sound when connected to a monophonic electronic source, the combination of a cabinet having an interior divided by a partition into two laterally disposed adjacent chambers directly radiating, loudspeakers in each said chamber, one of said chambers being a sealed chamber and the other being vented.

3,858,680

VIBRATION DIAPHRAGM AND CFNE EDGE OF A LOUDSPEAKER

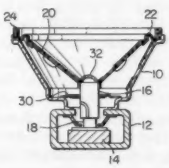
Yasuhiko Tsuge, and Noboru Koizumi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Company Limited and Sekisui Kagaku Kogyo Kabushiki Kaisha, both of Osaka, Japan

Division of Ser. No. 257,527, May 30, 1972,. This application Mar. 12, 1974, Ser. No. 450,320

Claims priority, application Japan, May 28, 1971, 46-44319; July 5, 1971, 46-49725; July 12, 1971, 46-61451

Int. Cl. G10k *13/00;* **H04r** *7/00*

U.S. Cl. 181—172 **4 Claims**



1. An annular cone edge for a loudspeaker, which cone edge is formed of a foamed copolymer of ethylene and vinyl acetate, having a closed-cellular structure.

3,858,681

CONVEYING OR HOLDING DEVICE FOR METALLIC SURFACES, MORE PARTICULARLY FOR THE SIDES OF SHIPS

Horst F. H. Scheiding, P.O. Box 1240-D, 2854 Loxstedt, Bremerhaven, Germany

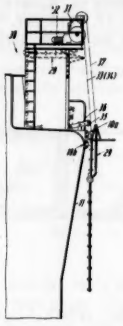
Filed May 7, 1973, Ser. No. 357,768

Int. Cl. B60s *3/02;* **E04g** *3/10*

U.S. Cl. 182—142 **11 Claims**

1. In a conveying device for conveying useful loads over ferrous metal surfaces, more particularly, over the sides of ships, having at least one magnet which is secured by way of a mobile carriage to a supporting frame for receiving useful loads a short distance away from the surface being crossed, the improvements comprising a mobile carriage (**14, 15; 16A . . . 220B**) which is pivotable relative to the supporting frame

(26, 27; 53) about a pivot axis (24) at right angles to the direction of movement, and a plurality of pairs of tread rollers (16A . . . 20B) arranged in the direction of travel and separated by the distance between their axes, the lateral separation of the front and rear tread rollers (16A, 16B; 20A, 20B) being less than the width of the magnets (12, 13).



3,858,682

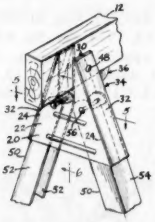
SAW HORSE CONSTRUCTION

Charles O. Larson, Sterling, Ill., assignor to Charles O. Larson Co.,, Sterling, Ill.

Filed Mar. 4, 1974, Ser. No. 447,728

Int. Cl. F16m *11/00*

U.S. Cl. 182—153 **3 Claims**



1. A structure for supporting a cross member that is adapted to cooperate with said structure to form a saw horse, said structure comprising a pair of bracket assemblies, each said bracket assembly including a main support bracket having a triangularly shaped face plate with a slot of predetermined width extending downwardly from an apex in the face plate, a shelf portion extending outwardly from a first surface of said face plate at the base of said slot, each main support bracket also including a pair of flanges and with said flanges being inclined along opposed sides of the associated main support bracket and lying on opposite sides of said slot, the flanges on one main support bracket being edge-wise aligned with the corresponding flanges of the other main support bracket, a plate overlying each pair of aligned flanges and securing the associated aligned pair of flanges rigidly together to form a housing defined in part by said face plates, which are spaced apart, and by said pairs of aligned flanges which converge toward the apexes of said slots, a pair of auxiliary brackets, each one of said pair of auxiliary brackets being associated with a corresponding main support bracket and each comprising a plate portion having a width substantially equal to the width of said slot and being received in said slot and being permanently secured to the associated main support bracket such that the plate portions are parts of said housing and are in alignment to constitute an abutment for supporting an end of said cross member, a pair of leg members having end portions in said housing, said leg members each having opposed sides that closely fit adjacent to said face plates and a web adapted to engage a pair of said aligned flanges in flush relation therewith so that said legs project downwardly and divergingly from said housing and the engagement of the legs with said housing provides a rigid support for an end of said cross member on said abutment, pivot-forming means spanning the space between said face plates for pivotally supporting said end portions of said leg members, and links pivotally connected to said leg members remote from said housing, said links being in articulated connection and forming a brace between said legs, said legs being movable together by rotation of each leg about its associated pivot means to a folded condition of said structure in which the extremities of the legs opposite to their pivotal connection are adjacent to each other.

3,858,683

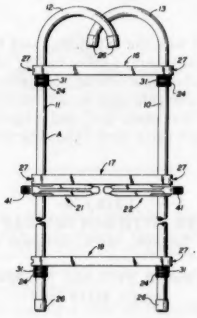
BOARDING LADDER

Eugene Rachocki, Erie, Pa., assignor to Zurn Industries, Inc., Erie, Pa.

Filed Jan. 30, 1974, Ser. No. 438,175

Int. Cl. E06c *1/36*

U.S. Cl. 182—156 **10 Claims**



1. A ladder for boarding a boat comprising spaced longitudinally extending side members, longitudinally spaced laterally extending steps rotatably supported on said side members, a standoff,

means for supporting said standoff on one said step selectively in parallel position and in perpendicular position thereto,

said means supporting said step comprising a downwardly extending boss on said step,

a bore in said standoff receiving said boss,

and means for clamping said step in position on said boss.

3,858,684

TELESCOPING LADDER

Harford E. Goings, 5908 Center Dr., Camp Springs, Md. 20031

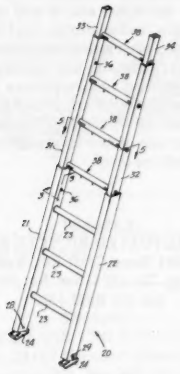
Filed June 27, 1973, Ser. No. 374,234

Int. Cl. E06c *1/12*

U.S. Cl. 182—207 **4 Claims**

1. A telescoping ladder comprising a pair of spaced apart parallel hollow side rails, a plurality of generally horizontal spaced apart rungs having their opposite ends rigidly secured to said side rails, additional side rails telescopically mounted in said side rails and adapted to move to an extended position with respect thereto, a plurality of rungs detachably secured to said additional side rails in generally horizontal spaced apart relation, means for releasably locking said named rungs to said additional side rails, the means for releasably locking

said rungs to said additional side rails including hand actuated means, said hand actuated means including a plurality of



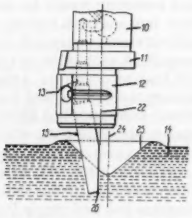
wedge members for expanding the ends of said last named rungs in said side rails.

3,858,685

LUBRICATING DEVICE IN COMPRESSORS FOR REFRIGERATORS

Luigi Bono, Pavia, Italy, assignor to NECCHI Society per Azioni, Pavia, Italy

Filed Oct. 18, 1973, Ser. No. 407,467
Claims priority, application Italy, Oct. 19, 1972, 42916/72
Int. Cl. F01m *1/06*
U.S. Cl. 184—6.16 **3 Claims**



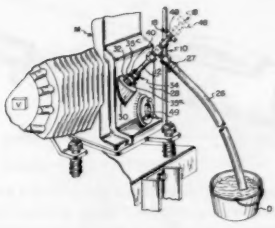
1. A lubricating device in a compressor with a vertical axis for a refrigerator comprising a tube placed in a slanting position at the end of the crankshaft of the compressor and adapted to pump, by a centrifugal effect, the lubricating oil contained in the lower part of the compressor shell to the couplings to be lubricated of said compressor, said tube having an upper part with a circular section and a lower part, immersed in the lubricant, having the cross-sectional shape of a spiral arc, in which said spiral arc, from the lower end of said tube, changes form until it becomes of circular cross-section at the lower end of said upper part, to create at the mouthpiece of the tube, a dynamic action on the lubricant in addition to the action due to the centrifugal effect in the determination of the head of the device.

3,858,686

OIL REMOVING TOOL AND METHOD

Hugh C. Luterick, 14559 State Rd., North Royalton, Ohio 44133

Filed Feb. 12, 1973, Ser. No. 331,552
Int. Cl. F01m *11/04*
U.S. Cl. 184—1.5 **10 Claims**



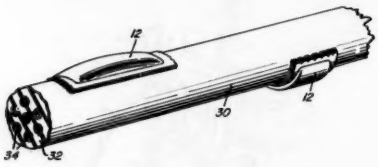
1. In a portable tool for removing oil from a crankcase of a compressor, comprising, an elongated tube having an ingress end and an egress end, coupling means movable lengthwise of the tube adapted for mounting said tool in a threaded axis opening in the crankcase disposed above the bottom wall of the crankcase, said coupling means including means for sealing the coupling means with respect to the tube, the latter extending completely through said coupling means, said sealing means including a sealing collar disposed in an externally accessible sleeve, said collar being adapted to be compressed into gripping, sealed coaction with said tube upon predetermined tightening actuation of said sleeve onto said coupling means to prevent leakage of oil between said tube and said coupling means, said tube being selectively movable generally lengthwise and with respect to said coupling means prior to sealing actuation of said sealing means, to position the ingress end of said tube close to the bottom of the crankcase when said tool is mounted on the crankcase, for insuring the removal of substantially all of the oil from the crankcase, valve means coacting with said tube in mounted relation thereon for controlling the flow of liquid through said tube and said valve means downstream from said ingress end of said tube for conveying oil from the crankcase through said valve means to a distal location with respect to said tube, said coupling means comprising a ferrule member having an externally threaded base section adapted to be received in threaded coaction in the threaded access opening in the crankcase, an intermediate exteriorly accessible ferrule actuation section providing for selective rotation of said ferrule member, and an externally threaded head section coaxially disposed with respect to said base section and said intermediate section, said sleeve being internally threaded and disposable in threaded coaction with said threaded head section, the latter coacting with said collar for causing squeezing of the collar into sealing relationship with respect to the tube and with respect to said head section upon predetermined threading of said sleeve onto said head section, said threaded base section, said intermediate ferrule actuation section and said sealing means providing rapidly actuatable means for mounting the tool on the crankcase and whereby said tube can be rapidly adjusted lengthwise thereof to locate said ingress end adjacent the bottom of the crankcase and said tube can be placed in sealed relation with respect to said ferrule member, and also providing for rapid removal of the tool including said coupling means from mounted relation on the crankcase, upon completion of the oil removing operation and without total disassembly of said coupling means.

3,858,687

METHOD AND APPARATUS FOR LUBRICATING CONDUCTORS BEING PULLED THROUGH CONDUITS

Allyn M. Masarky, McNamara Rd., Spring Valley, N.Y. 10977, and Nathaniel H. Masarky, 73 Edgewood St., Tenafly, N.J. 07670

Filed July 23, 1973, Ser. No. 381,450
Int. Cl. F16n *1/00*
U.S. Cl. 184—15 R **6 Claims**



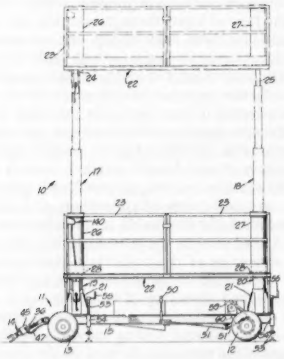
1. The method of lubricating a cable as it is pulled through a curved portion of an extended length conduit section spaced from the opposite ends of said section, said method comprising the step of attaching low profile envelopes of flexible and rupturable material having lubricant disposed therein to the outer surface of the cable at points spaced longitudinally therealong and circumferentially thereabout and thereafter pulling the cable through the conduit, whereby as the envelopes of lubricant move through zones of heavy friction between the cable and inner conduit surfaces, such as said curved portion of said conduit, the envelopes will be ruptured by the increased pressure of lubricant therein and the lubricant will be expressed from the envelopes to lubricate both the cable and conduit inner surface in said zones of heavy friction.

3,858,688

SELF-CONTAINED MOBILE EXTENDABLE TOWER

George W. Galloway, Arcadia, Calif., assignor to G. W. Galloway Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 233,613, March 10, 1972, abandoned. This application June 8, 1972, Ser. No. 261,081
Int. Cl. B66b *9/20*
U.S. Cl. 187—9 **34 Claims**



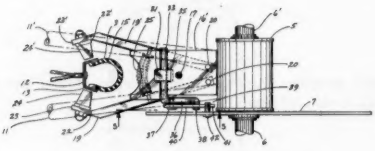
1. Apparatus for moving a load between different levels comprising in combination: a horizontal load platform, a main frame underlying said platform, a plurality of multistage mast assemblies arranged in parallel and interconnecting said main frame and the opposite ends of said platform and including an elongated horizontal axis pivot connection extending transversely of and interconnecting one end of said platform and one of said mast assemblies, separate hydraulic pumps of identical displacement connected in circuit with a respective one of said mast assemblies to supply pressurized fluid thereto and operable in either direction by common prime mover means to extend and retract said mast assemblies in unison, normally closed electrically actuated bleed valve means for bleeding fluid from the higher one of said ram assemblies as necessary to maintain said platform level despite the non-uniform loading of said mast assemblies during both extension and retraction of said platform, and non-level sensor means connected to said platform and responsive to pivotal movement of said platform about the axis of said pivotal connection to operate a selected one of said bleed valve means to bleed fluid from any higher one of said mast assemblies as necessary to maintain said platform level.

3,858,689

PEDAL ACTUATED BICYCLE BRAKE

Edwin E. Foster, 1801 Samp Craft Rd., Austin, Tex. 78767

Filed Aug. 22, 1973, Ser. No. 390,543
Int. Cl. B62l *1/00*
U.S. Cl. 188—24 **7 Claims**



1. For use with a bicycle having a frame, front and rear wheels supported on said frame, a pedal crank assembly with a main shaft and pedal cranks, and a drive sprocket carried on said main shaft, a brake assembly comprising mounting means detachably engageable upon said frame, a pair of calipers having rearward end portions on opposite sides of said rear wheel, each caliper being swingably mounted in their forward end portions on said mounting means for movement of their rearward end portions into and from braking engagement with said rear wheel, resilient means engaged between said calipers for urging same away from each other in their rearward end portions or into non-braking condition, a toggle link engaged to each caliper between the forward end portion thereof and said resilient member, a connector link disposed between said calipers and engaged to the adjacent portions of said toggle links, a force pin carried on said sprocket, and rockable means engageable with said connector lnk and said force pin whereby under influence of said force pin said rockable means will cause said connector link and toggle links to be directed rearwardly overcoming said resilient means and causing said calipers to be moved in their rearward end portions into braking condition with said rear wheel.

3,858,690

CHOCK

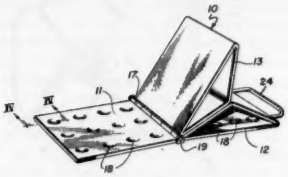
Odie D. Facemire, Clark Rd., Shirley, Mass. 01464

Filed Aug. 10, 1973, Ser. No. 387,536
Int. Cl. B60t *3/00*
U.S. Cl. 188—32 **9 Claims**

1. A chock for a wheeled vehicle, comprising:
   a. a flat plate adapted to rest flat on the ground and to receive a substantial portion of the wheel pressure,
   b. a wedge hingedly connected to the plate and adapted to rest on the ground and to prevent the wheel from rolling,

and

c. a second wedge hingedly connected to the flat plate and



the first-recited wedge for hinged movement about the same axis that they share.

3,858,691

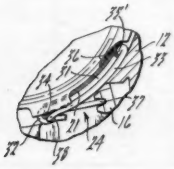
BRAKE BAND END CONNECTION

Thomas J. Victory, 25167 Harcourt, Farmington, Mich. 48024

Continuation-in-part of Ser. No. 269,534, July 7, 1972, Pat. No. 3,747,713. This application June 11, 1973, Ser. No. 369,073. The portion of the term of this patent subsequent to July 24, 1990, has been disclaimed.

Int. Cl. F16d *65/06*

U.S. Cl. 188—259 **4 Claims**



1. A brake band end connection which enables the band to be fed longitudinally between a transmission housing and a drum and be engaged by an axially reciprocating force-applying member carried by the housing, the end connection comprising a curved end plate overlapping and secured to the brake band, a reversely shaped pocket on the outer end of said end plate, the other end of the end plate having a transverse edge, a separate curved bracket having a nose receivable by said pocket and a shoulder at the other end of sufficient thickness to occupy substantially the entire space between the brake band and housing when the parts are in operative position, and an outwardly extending tang engageable by said force-applying member when the band is moved so as to slide the bracket back into the space between the drum and housing, the thickness of the bracket including said shoulder being such that it will be retained by the housing, said bracket thickness being constant along its length sufficiently so that the bracket can be slid back into the space between the drum and housing, the dimensions of said shoulder being such that when full force is applied by the force-applying member to the tang the shoulder will be spaced from said transverse end plate edge, said tang being axially aligned between said reciprocating force-applying member and said nose, whereby the entire force will be transmitted to the end plate through said nose and pocket.

3,858,692

VEHICLE WHEEL BRAKE

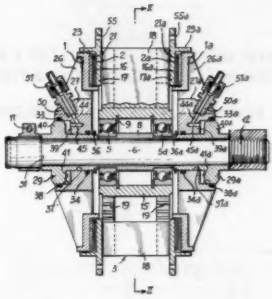
Jean-Jacques Luchier, and Philippe Luchier, both of 14, rue Berthelot, Domont, France

Filed June 11, 1973, Ser. No. 368,967

Claims priority, application France, June 13, 1972, 72.21185

Int. Cl. B60t *1/06*

U.S. Cl. 188—366 **6 Claims**



1. A brake device for a wheel, the wheel having a hub mounted for rotation about an axle, the hub being characterized by at least a first lateral face lying in a plane perpendicular to the axis about which the wheel rotates, the brake device comprising:

a first layer of lining material having a high coefficient of friction disposed on at least part of the hub first lateral face;

annular brake plate means, said brake plate means being axially movable with respect to the hub and having a first face which is normally in opposed parallel spaced relationship to said first layer of said lining material on the hub first lateral face, said brake plate means being coaxial with the axle;

a second layer of lining material having a high coefficient of friction disposed on at least part of said brake plate means first face so as to normally be in registration with and spaced from said first layer of lining material;

cylinder defining means, said cylinder defining means having a first cylindrical bore of first diameter and a second cylindrical bore of greater diameter than said first bore, said first and second bores being in communication with one another and being both coaxial with the axle, the junction between said bores defining a radially extending shoulder, said cylinder defining means being disposed inwardly toward the axle with respect to said brake plate means;

a plurality of radially extending ribs rigidly connecting said cylinder defining means to said brake plate means, said ribs in part defining a plurality of passages between said plate means and said cylinder defining means;

a piston having a cylindrical body portion and a cylindrical first portion of increased diameter extending from said body portion, said piston body portion diameter being commensurate with the diameter of said cylinder defining means first bore whereby said piston may be operatively associated with said cylinder defining means with said first portion being disposed in said second bore and said piston body portion extending through said first bore, said piston further having a cylindrical bore commensurate in diameter with the diameter of the axle whereby the piston may be installed on the axle;

means for preventing translational movement of said piston on the axle;

stop means affixed to said piston body portion for limiting translational movement of said cylinder defining means with respect to said piston;

resilient seal means disposed between said cylinder defining means and said piston; and

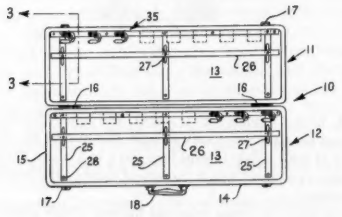
means for delivering fluid under pressure to said cylinder defining means second bore between said cylinder defining means shoulder and said piston whereby said cylinder defining means may be caused to move axially to produce contact between said first and second layers of lining material.

3,858,693

SHOE DISPLAY AND CARRYING CASE

Nicholas I. Dubenko, 1338 Mission St., San Francisco, Calif. 94103

Filed Feb. 7, 1973, Ser. No. 330,299
Int. Cl. B65d *85/18*
U.S. Cl. 190—16 **5 Claims**



1. A portable shoe display device comprising a substantially planar base member having a rearward longitudinal edge, a plurality of pivoted clamping members pivoted on a common axis adjacent said rearward edge and allowing pivotal movement of each clamp member in a vertical plane forwardly of said rearward edge, each said clamping member having a generally cylindrical contact portion mounted horizontally and serving to contact the heel of a shoe, resilient means acting on each clamp member to urge it downwardly and forwardly but retractable manually to permit insertion and removable of a shoe, and stop means fixed to said base forwardly of said clamp members to contact the forward portions of the heels of shoes.

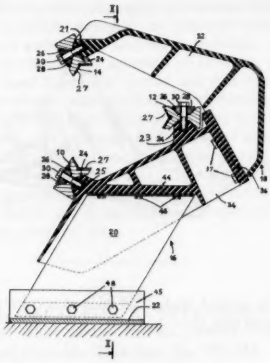
3,858,694

RESILIENTLY SUPPORTED ELECTRICAL DISTRIBUTION MEANS FOR MOVABLE CURRENT COLLECTING MEANS

Daniel Laurent, Grenoble, France, assignor to Societe Dauphinoise Electrique, Grenoble, France

Filed Feb. 20, 1973, Ser. No. 334,089
Claims priority, application France, Mar. 15, 1972, 72.09748
Int. Cl. B60m *1/30*
U.S. Cl. 191—32 **9 Claims**

1. An electrical distribution system for use with movable current collecting means comprising longitudinally extending conductive rail means adapted for sliding contact with said current collecting means, a plurality of support members spaced apart along said rail means, each support member including a stationary base member; bracket means fixedly secured to said rail means; and resilient connecting means elastically yielding in substantially only one direction to connect said base member to said bracket means for movement of said bracket means substantially only in the longitudinal direction of said rail means to permit thermal expansion and



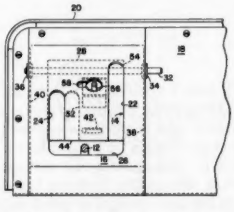
contraction movements of said rail means relative to said base member.

3,858,695

TRANSMISSION AND BRAKE INTERLOCK

Edwin Lee Whisler, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Feb. 6, 1974, Ser. No. 439,886
Int. Cl. B60k *29/02*
U.S. Cl. 192—4 A **7 Claims**



1. An interlocked vehicle transmission and brake control, comprising: a support structure; an instrument panel fixed to the support structure to thus form part of a fixed console structure; an elongate opening being in said panel; a transmission shift lever projecting upwardly through said opening and the opening being shaped for guiding the transmission shift lever along a path between at least first and second locations of the opening for respectively establishing neutral and driving transmission conditions; a blocking plate shiftably mounted on said console structure for movement along a path disposed adjacent said panel between normal and blocking positions respectively wherein the plate is disposed clear of said path of movement of the shift lever so as to permit uninhibited movement of the shift lever in said elongate opening, and wherein the plate is disposed crosswise relative to said path of movement of the shift lever at a location which prevents movement of said shift lever between said first and second locations of the opening; a generally keyhole-shaped opening located in said panel adjacent said elongate opening and oriented substantially symmetrically relative to a line located along the path of shifting movement of the blocking plate; a brake release linkage including a manually operable rod projecting upwardly through said blocking plate and keyhole-shaped opening and being mounted on said blocking plate for shiftable movement therewith relative to said keyhole-shaped opening and for reciprocable movement relative thereto; said keyhole-shaped opening being defined by first and second interconnected portions, the first portion being larger in trans-

verse dimension than the second portion; said rod being movable between a brake engage position corresponding to the blocking position of said blocking plate wherein a first section of the rod having a dimension too large to permit it to move into said second portion of the keyhole-shaped opening is received in said first portion of said keyhole-shaped opening and a normal brake release position corresponding to the normal position of the blocking plate and wherein said rod is disposed upwardly in said keyhole-shaped opening from said brake engage position to a brake release position wherein an immediately adjacent second section of said rod dimensioned to fit said second portion of said keyhole-shaped opening is received therein and said first section of the rod being engaged with the instrument panel at the periphery of said second portion of said keyhole-shaped opening, whereby said rod is shiftable into the second portion of said keyhole-shaped opening when the blocking plate is moved from its blocking to its normal position; and biasing means acting on said rod in a direction to maintain the rod in its brake engage position.

3,858,696

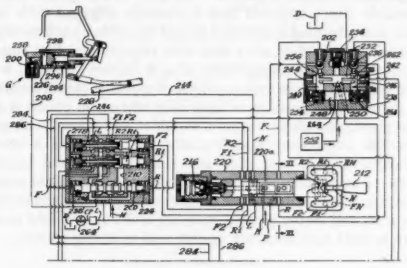
FORWARD REVERSE DRIVE CONTROL PROVIDING AUTOMATIC BRAKING

Daniel B. Shore, Niles, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. Nos. 689,549, Dec. 11, 1967, Pat. No. 3,458,018, and Ser. No. 149,853, June 3, 1971, Pat. No. 3,843,205, Division of Ser. No. 830,035, June 3, 1969, Pat. No. 3,606,906. This application May 19, 1972, Ser. No. 254,966

Int. Cl. B60k *29/00*

U.S. Cl. 192—4 C **8 Claims**



1. In means to reduce the change-direction-shock in a vehicle equipped with a signal responsive power brake system which, in response to a brake apply signal, arrests movement of the vehicle in forward and rearward directions of actual movement, which releases in response to a brake voiding signal, and which has two sensing points each for receiving a different one of the respective apply signal and voiding signal communicated thereto, a fluid circuit, a source of high pressure and low pressure fluid for supplying fluid to said circuit, controllable torque transmission means drivable to change the vehicle to a forward or rearward direction of movement desired and operatively receiving fluid of said circuit, and a shift control in said circuit which is forwardly and rearwardly shifted to control direction of drive of the transmission:

the improvement of first valve means (**220, 2CD**) forming part of said shift control effective to be correspondingly forwardly and rearwardly shifted thereby, and to assume no fewer (N, FN, RN) than one intermediate position of neutral, said first valve means effective to communicate a brake apply signal (**208**) to one of the sensing points of the brake system; and

second valve means forming part of the first valve means effective to communicate (**214**) a brake voiding signal (N) to the other sensing point of the brake system, when the first valve means assumes at least one neutral position aforesaid.

3,858,697

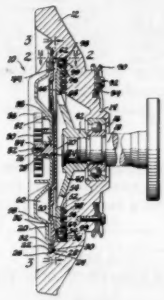
VISCOUS FLUID CLUTCH WITH SUPPLEMENTING CENTRIFUGAL CLUTCH

Robert W. Brewer, and Danny R. Phillips, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 10, 1973, Ser. No. 423,140

Int. Cl. F16d *31/08, 43/24;* **F01p** *7/02*

U.S. Cl. 192—58 B **4 Claims**



1. A viscous fluid drive mechanism comprising first and second relatively rotatable drive means, said first drive means being rotatably mounted by bearings on a central shaft and having an annular chamber formed therein, said second drive means being secured to said central shaft and extending radially outwardly into said annular chamber so as to provide a predetermined shear space intermediate said first and second drive means, said shear space being operable with a fluid medium to provide a shear-type fluid drive between said first and second drive means, a pair of oppositely disposed slots formed in said first drive means radially outwardly from said second drive means and including a shoulder formed at one end of each of said slots, a pair of oppositely disposed arcuate-shaped pockets formed in the outer peripheral edge of said second drive means, a centrifugal weight member pivotally mounted at an intermediate but off-center point thereof in each of said pockets, and resilient means mounted in each of said pockets for urging the adjacent lighter end of said respective centrifugal weight members radially outwardly into said respective slots for contacting said respective shoulders so as to produce a direct mechanical drive relationship between said first and second drive means until such time as the heavier end of said respective centrifugal weight members pivots radially outwardly under the action of the centrifugal force, thereby releasing said lighter ends of said centrifugal weight members from said respective shoulders and permitting said shear-type fluid drive to become effective.

3,858,698

UNITARY SPRING FOR STROKING TRANSMISSION SERVO MOTOR

Gilbert K. Hause, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

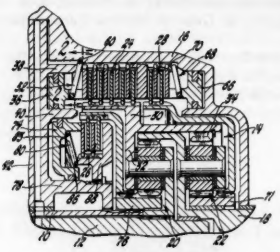
Filed May 16, 1973, Ser. No. 360,789

Int. Cl. F16d *25/00*

U.S. Cl. 192—89 R **3 Claims**

1. In a transmission having an input and an output, a gear unit operatively connecting said input to said output, a selectively engageable friction device operatively connected to said gear unit for selectively changing the input/output speed ratio of said transmission, motor means movably mounted in said transmission for effecting the engagement of said friction device, spring means operatively disposed between said motor means and said friction device, said spring means comprising a symmetrical one-piece wire spring of uniform cross section

which is waved to have inwardly curved inner contact portions and to have outwardly curved peripheral contact portions and



shaped into a serpentined wire frustum so that said inner contact portions form one end of said frustum and said outer contact portion forms a base of said frustum.

3,858,699

SINGLE LEVER CONTROL FOR THROTTLE AND GEARING

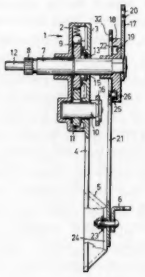
Tore Erik Karl Comstedt, Stockholm, Sweden, assignor to AB Tekniska Fjadrar, Frolunda, Sweden

Filed June 4, 1973, Ser. No. 367,001

Claims priority, application Sweden, June 16, 1972, 7983/72

Int. Cl. B60k *21/00*

U.S. Cl. 192—.098 **5 Claims**



1. Control for carrying out two different control operations by means of one operating lever, preferably for control of the throttle and gearing in boat motors, comprising a main axle rotatably journalled in a housing, upon which axle the operating lever acts, a first operating arm for the shifting operation, said arm being affected by the turning of the main axle by means of movement-transferring means, and a second operating arm for throttle operation, said second arm being secured to the main axle and designed to be connected to a control wire with an outer casing which has a displaceably mounted attachment whose displacement is achieved by means which are coupled with the main axle, characterized in that the means which are coupled to the main axle comprise a cam follower and a cam member with a cam curve, the cam curve having such a shape and being so disposed that the initial turning of the main axle from a neutral position produces a displacement of the attachment member of the casing in the same direction as the control wire is displaced by the second operating arm, thereby achieving a delay of the operating function of the second operating arm in relation to that of the first arm.

3,858,700

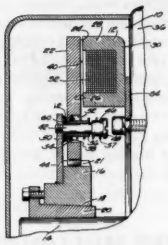
SELF-ADJUSTING CLUTCH OR BRAKE

Thomas J. Kirschling, Milwaukee, Wis., assignor to FMC Corporation, Chicago, Ill.

Division of Ser. No. 251,893, May 10, 1972, Pat. No. 3,762,522. This application July 9, 1973, Ser. No. 377,666

Int. Cl. F16d *13/75*

U.S. Cl. 192—111 A **3 Claims**



1. A self-adjusting clutch structure comprising a hub and first and second clutch members having opposed axially faced engageable friction surfaces spaced by a predetermined air gap when said clutch is de-energized, with said first member being movable axially over a guide to engage said second clutch member, said axially movable member being a clutch armature supported by and movable relative to said clutch hub, a slide movable on said guide between first and second stops and retaining means on said slide abutting said axially movable clutch member and frictionally engaged with said slide and affording movement of said movable clutch member relative to said slide after said slide engages said first stop if required to cause engagement of said friction surfaces, with said retaining means maintaining said movable clutch member at the adjusted position on said slide when said clutch is de-energized, said guide having a shoulder and a head with said shoulder comprising said first stop and including a spring arranged around said slide and said shoulder and located between said retaining means and said head to bias said axially movable first member to the de-energized position and including a second spring located between said hub and said armature to hold said armature against said retaining means.

3,858,701

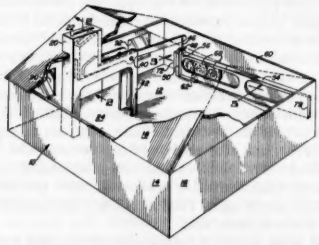
INTEREST-PAYING SAVINGS BANK

Laurence M. Bauer, 1220 W. Palo Verde Dr., Phoenix, Ariz. 85013, and Michael J. Krzyston, Phoenix, Ariz., assignors to said Bauer, by said Krzyston

Filed July 16, 1973, Ser. No. 379,358

Int. Cl. G07f *9/00*

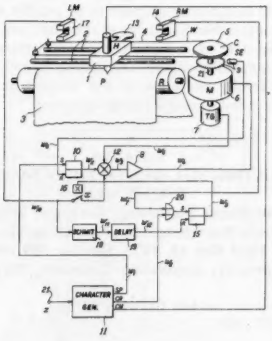
U.S. Cl. 194—1 F **10 Claims**



1. A toy savings bank adapted to encourage children to save coins by immediately rewarding them with an additional coin for each deposited coin, said bank comprising:

a. a coin input guide, said guide having one end terminating within said bank;
b. a pivoted lever mounted within said bank, one arm of said lever extending into proximity with said end of said guide, said lever being pivotally actuated by any coin passing through said guide;
c. a magazine disposed within said bank for temporarily storing a plurality of additional coins, said magazine including an input opening for loading said magazine and a delivery opening for emptying said magazine into said bank; and
d. a gate member responsive to pivotal movement of said lever, said gate member selectively releasing one of the additional coins from said magazine; whereby, a coin deposited through said guide causes an additional coin from said magazine to be deposited within said bank and simulate the payment of interest.

3,858,702
DEVICE FOR FEEDING A PRINTER HEAD
Nobuhiro Azuma, Tokyo, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan
Continuation-in-part of Ser. No. 100,116, Dec. 21, 1970, abandoned. This application Aug. 20, 1973, Ser. No. 389,505
Int. Cl. B41j 1/34
U.S. Cl. 197—1 R **5 Claims**

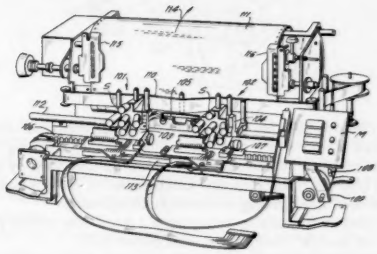


1. A device for feeding a printer head, comprising: feeding means for feeding the printer head along a straight path in a forward direction and a backward direction, said feeding means comprising a rotary capstan, a cable coupled to said capstan, a motor connected to said capstan to rotatially drive the same, and a shaft encoder for encoding the rotated angle of the motor;

drive means for driving the motor to effect stepwise motion of the printer head in the forward direction by the use of a step pulse and the output of the shaft encoder and to effect movement of the printer head in one motion in the backward direction by the use of a return pulse; a noncontact switch arranged along the straight path to coupled with the printer head as the printer head moves therealong, said noncontact switch having a first state wherein the noncontact switch delivers an output signal to said motor to feed the printer head in the backward direction when the noncontact switch is not coupled with the printer head, having a second state wherein the noncontact switch delivers another output signal to said motor to feed the printer head in the forward direction when the noncontact switch is coupled with the printer head in advance of the printer head reaching an end position, and having a third state wherein the noncontact switch does not deliver any output signal when the printer head is returned to said end position; and

switch means connected between the output of the noncontact switch and the drive means to be closed in response to the return pulse and to be opened when said noncontact switch is in said third state to control the pulses applied to said motor.

3,858,703
BIDIRECTIONAL DUAL HEAD PRINTER
Howard Duley, Hudson, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.
Filed Nov. 12, 1973, Ser. No. 414,645
Int. Cl. B41j 1/34
U.S. Cl. 197—1 R **13 Claims**



1. Control means for operating a printer having at least first and second printer heads each of said heads having a plurality of print wire solenoids for selectively generating dot column patterns;

said control means comprising first means for storing and recirculating binary coded data words each representing an alphanumeric character to be printed including means for reinserting the word at the output stage of the first means back into the input stage to cause said first means to operate as a recirculating memory;

second means for shifting said words in said first means;

third means coupled to said second means for counting the number of shift operations performed;

fourth means for temporarily storing a data word;

fifth means coupled to said third means for writing the data word appearing at the output stage of said first means into said fourth means without removing the data word from said first means when said third means reaches a predetermined count;

character generator means for generating signals representing a dot column pattern for the data word in said fourth means;

sixth means responsive to a second predetermined count in said third means for coupling the output of said first means to said character generating means;

seventh means for temporarily storing the dot column pattern signals generated by said character generator means when coupled to said fourth means;

eighth means coupled to said third means for terminating operation of said second means when said third means reaches a predetermined count, said eighth means including means for coupling the data word in the output stage of said first means to the input of said character generating means;

ninth means responsive to said eighth means for simultaneously coupling the outputs of said seventh means and said character generating means to said first and second print heads to print dot column patterns.

3,858,704

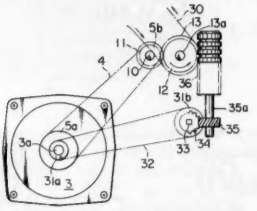
TAPE CONTROLLED LINE SPACING AND FORM FEED MECHANISM

Reijiro Kawano; Kazuhiro Goda, both of Kawasaki; Hiroshi Yamakawa, Tokyo, and Osamu Ohhara, Sagamihara, all of Japan, assignors to Kurosawa Tele-Communications Limited, Tokyo, Japan

Filed May 23, 1972, Ser. No. 256,124

Int. Cl. B41j *15/00*

U.S. Cl. 197—133 R **4 Claims**



1. In a printer for serially recording selected characters of a type wheel along two print lines of a typewriting paper mounted on a platen provided with a platen shaft, by means of a type character selection mechanism driven by a motor, an improved line spacing mechanism comprising:

a first shaft rotatably mounted to a side-frame of said printer in parallel condition to said platen shaft;

intermediate power transmission means for continuously transmitting driving power of said motor to said first shaft;

clutch means for selectively transmitting driving power of said first shaft to said platen shaft;

means for actuating said clutch means in accordance with a command signal for carrying out a line spacing operation, said clutch means comprising a first clutch member rigidly mounted on said first shaft and a second clutch member mounted on said first shaft, said second clutch member being axially slideable and rotatable with respect to said first shaft, said second clutch member being engageable and disengageable with respect to said first clutch member responsive to said command signal and said actuating means; and,

a pinion mounted on said first shaft, said pinion being axially slideable and rotatable with respect to said first shaft, said pinion being connected to said second clutch member, said platen shaft having a detent gear secured thereon in engaging disposition with said pinion.

3,858,705

COLOR CODED DIGIT IDENTIFYING VALUE RIBBON FOR DOCUMENT FRAUD PREVENTION

Carmen T. Reitano, Methuen, Mass., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 3, 1972, Ser. No. 303,382

Int. Cl. B41j *31/02*

U.S. Cl. 197—172 **2 Claims**

1. Color coded digit value identifying means for making a multicolor impression on a negotiable document comprising:

a multicolor ribbon including distinguishable separate colored areas of red, black, orange, blue, gray, green and brown extending from end to end thereof and a separate contiguous black area for receiving an impression from a prefix designating element and forming a color code digit value identifying means from the most to the least significant digit position,

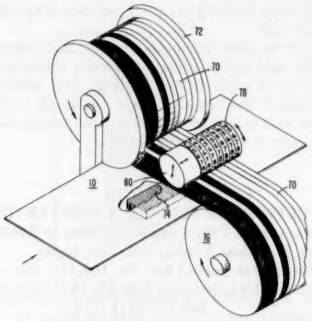
means mounting said ribbon for indexible presentation to an impression receiving area,

a plurality of digit impression producing elements,

a prefix designating element selectively movable so as to be positioned adjacent to the digit of largest denomination,

a take up member for said ribbon adjacent said impression receiving area, and

said ribbon mounting and indexing means and said movable prefix designating element being movable to position a selected color area of the ribbon adjacent to said prefix designating element at the impression receiving area responsive to the movement of the digit impression producing elements to the selected denominational order position to cause the image of the digits of the amount and said designating element to be printed and shredded into a negotiable document so that the code of the colors from least to most significant digit corresponds to the predesignated positional orientation of colors of the ribbon whereby alteration of the amount or any portion thereof is immediately visibly apparent.



3,858,706

TABULATING MECHANISM FOR A DUAL PITCH ESCAPEMENT

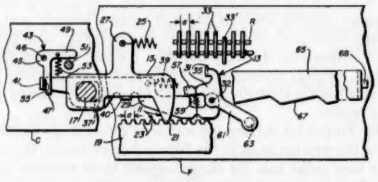
Helmut Gottsmann, Nuernberg, Germany, assignor to Triumph Werks Nuernberg A.G., Nuernberg, Germany

Filed May 10, 1973, Ser. No. 359,129

Claims priority, application Germany, May 16, 1972, 2223689

Int. Cl. B41j *25/18*

U.S. Cl. 197—176 **4 Claims**



1. In a business machine having relatively movable first and second elements, the combination comprising:

an escapement rack associated with said first element for relative movement therewith and having a plurality of teeth formed thereon each defining a character space,

a feed pawl pivotally supported about a point on said second element for relative movement therewith and having a tooth for engaging the teeth of said escapement rack,

said feed pawl being resiliently urged into engagement with said escapement rack for controlling the relative movement between said first and second elements in a letter feed direction,

a control member pivotally supported about the point on said second element for disengaging said feed pawl from said escapement rack during a tabulating operation to

permit free relative movement between said first and second elements in the letter feed direction,

a tab rack associated with said first element for relative movement therewith and having a plurality of settable tab stops each corresponding to a character space different from the character space defined by the teeth of said escapement rack,

a tab member having a tab blade for engaging a set tab stop on said tab rack during a tabulating operation,

said tab member being pivotally supported on said control member for enabling the tab blade to be moved relative to said control member on said second element, and

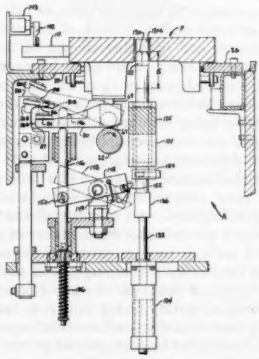
tab member control means associated with said first element and operable in response to relative movement between said first and second elements during a tabulating operation for pivoting said tab member to alter the position of said second element relative to said first element upon engagement of the tab blade with a set tab stop to compensate for the difference in character spacing between the teeth of said engagement rack and the settable tab stops.

3,858,707

CONVEYOR SYSTEM

Bruce E. Block, and Alan F. Kubinski, both of Rockford, Ill., assignors to Rockford Automation Inc., Rockford, Ill.

Filed Nov. 7, 1973, Ser. No. 413,567
Int. Cl. B23q *5/22*
U.S. Cl. 198—19 **15 Claims**



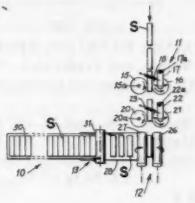
1. A conveyor system including: a frame; a drive shaft rotatably mounted on the frame; means for rotating the drive shaft; a plurality of pallets mounted for movement along a pathway parallel to the drive shaft; at least one drive wheel pivotally mounted on each pallet for movement between a drive position engaged with the drive shaft oblique to the longitudinal axis thereof, and a stop position in which no linear force is transferred from the drive shaft to the pallet; means for resiliently urging the drive wheel toward the drive position; a control arm extending laterally of said pathway and operatively connected to the drive wheel for moving it from the drive position to the stop position; stop means at a work station along said pathway for engaging the control arm and moving the drive wheel to the stop position; positioning means for engaging the pallet when it is stopped at the work station; reciprocating means for moving the positioning means between a position engaged with the pallet and a disengaged position; and means associated with the reciprocating means for effecting relative movement between the control arm and the stop means to disengage them simultaneously with movement of the positioning means to disengaged position.

3,858,708

METHOD AND APPARATUS FOR MANIPULATING ROD-LIKE ARTICLES

Frank Hollenton, and John L. Ingalls, both of Richmond, Va., assignors to AMF Incorporated, White Plains, N.J.

Filed Oct. 27, 1972, Ser. No. 301,377
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 C **26 Claims**



1. In an apparatus for handling rods, an arrangement for receiving a longitudinally moving stream of rods end to end, arresting the articles of the stream and diverting them downwardly onto a path which extends at an angle to said stream, on which path the articles move with their axes side by side, comprising:

means for advancing the stream of rods along a first horizontal straight line path longitudinally, end to end,

a pair of deflector rollers located one on each side of said straight line path, each roller having a peripheral surface developable into a plane and movable about its axis and adjacent to said stream such that the part of the peripheral surface closest to a vertical plane passing through the center of the stream lies on a contact line which is inclined upwardly relative to the said first straight line in the direction of travel of the rods in the stream, the two contact lines of the two rollers being parallel to each other and being located on opposite sides of the said vertical plane through the stream and spaced therefrom a distance generally equal to the radius of the rods, the contact lines thus defining a gap generally equal to the diameter of the rods, which gap intersects the said straight line path and is inclined upwardly relative thereto such that the forward ends of the rods advancing along said straight line path become engaged by the contact lines of the rollers,

means for rotating the two deflector rollers in opposite directions about their respective axes for moving both peripheries downwardly as the peripheries move through their respective contact lines adjacent the stream of rods, said means being operable to turn the peripheries of the rollers at a speed relative to the longitudinal speed of the rods as imparted by the rod advancing means such that rods, upon initially engaging the contact lines of the rollers, are moved both in the longitudinal direction and downwardly, wherein the longitudinal movement of the rods is gradually reduced over a given longitudinal distance from their initial speed upon first engaging the rollers so that the rods fall downwardly after leaving the rollers, said means for advancing comprising means for advancing rods of a predetermined length, said rollers being positioned at a height, relative to the height of the stream of rods, to grip a forward part of each rod with points on the contact lines above the lowermost ends of the contact lines, and as the rods move downwardly, progressively gripping rearward points on the rods by progressively rearward points on the contact lines until the rod is released by the rollers for downward movement onto said path, and including a space in the path of the rod beyond the point of initial engagement of the rod and

the contact lines permitting substantial longitudinal movement of the rod from the time of contact until it is received on the receiving means,

and receiving means for receiving the arrested rods falling under gravity from the rollers, the receiving means positioned to receive the leading ends of the rods at points spaced longitudinally, taken in the direction of travel of the rods, from the point where the rods first engage the contact lines, so as to receive the rods after their longitudinal movement has been gradually arrested over said given longitudinal distance.

3,858,709

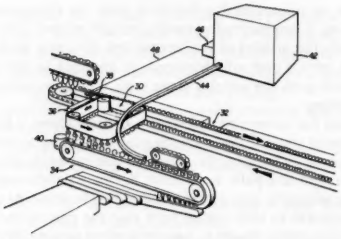
CONTAINER HANDLING APPARATUS

John D. Banyas, Toledo, and Frederick L. Wallington, Perrysburg, both of Ohio, assignors to Owens-Illinois Inc., Toledo, Ohio

Division of Ser. No. 154,038, June 17, 1971, , Division of Ser. No. 24,173, March 31, 1970, Pat. No. 3,637,074. This application July 11, 1973, Ser. No. 378,382

Int. Cl. B65g *47/61*

U.S. Cl. 198—20 R **7 Claims**



1. In a container handling apparatus for handling containers having hemispherical bottoms; container chuck means comprising a hollow annular housing having an open recess at one end and having an inlet passage extending axially from said recess through the opposite end of said housing, means in said recess at said one end of said housing defining an annular seat adapted to engage the hemispherical bottom of a container to locate the container in coaxial relationship with said housing with the container bottom projecting a predetermined distance into said recess, a flexible annular seal member mounted in said housing in coaxial relationship with said seat and located to sealingly engage the bottom of a container before the container engages said seat and to maintain the sealing engagement with the container bottom when the container bottom is engaged with said annular seat, valve means in said inlet passage having a valve seat within said inlet passage facing away from said recess of said housing, a valve head slidably mounted in said inlet passage for movement into and out of engagement with said valve seat and operable, when engaged on said valve seat, to block communication between said inlet passage and recess, means in said inlet passage normally biasing said valve head against said valve seat, a stem on said valve head projecting from said inlet passage into said recess and operable when engaged by the bottom of a container engaged by said annular seal to disengage said valve head from said valve seat to thereby place said inlet passage in communication with said recess, a source of vacuum and a source of air under pressure, a hollow shaft coaxially and fixedly mounted upon said opposite end of said housing with the interior of said hollow shaft in direct communication with said inlet passage, control valve means mounted upon the end of said shaft remote from said housing and connected to said source of vacuum and said source of air under pressure, said control valve means being operable in a first position to connect the interior of said shaft to said source of vacuum, and being operable in a second position to connect the interior of said shaft to said source of air under pressure means normally maintaining said control valve means in said first position, conveying means for supporting and driving said chuck means along an endless path, a control valve means actuator mounted upon said control valve means and operable when depressed to shift said control valve means to said second position, and cam means mounted alongside said endless path and operable to depress said actuator as said actuator is moved past said cam means.

3,858,710

MAGNETIC GUIDE ROLLER FOR CONVEYOR BELTS

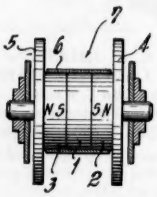
Heinrich Spodig, Netteberge 84, 4711 Bork/Westfalen, Germany

Filed Feb. 8, 1974, Ser. No. 440,705

Claims priority, application Germany, Feb. 13, 1973, 2306931

Int. Cl. B65g *17/46*

U.S. Cl. 198—41 **1 Claim**



1. In a conveyor belt arrangement, a magnetic guide roller for guiding a conveyor belt of the conveyor belt arrangement, comprising, in combination, a stack of concentric first, second, third, fourth and fifth disk-shaped sections, said first disk-shaped section being sandwiched between said second and third sections and being of equal diameter as said second and third sections to form therewith a hub of the guide roller, said first section being of magnetically conductive material, and said second and third sections being permanently magnetized in axial direction with facing axial pole faces of said second and third sections being of like polarity, said first, second and third sections being sandwiched between said fourth and fifth sections, and said fourth and fifth sections having diameters greater than the diameter of said first, second and third sections so as to form radially outwardly projecting guide flanges for preventing lateral shifting of a belt travelling around said hub, said fourth and fifth sections completely covering outwardly facing axial pole faces of respective adjoining ones of said second and third sections and being of magnetically conductive material not permanently magnetized.

3,858,711

CONVEYING ARRANGEMENT FOR CONTAINERS

Maynard C. Barker, 10906 Ridgedale Rd., Temple Terrace, Fla. 33617

Division of Ser. No. 288,447, Sept. 12, 1972, which is a division of Ser. No. 147,682, May 28, 1971, which is a continuation of Ser. No. 788,136, Dec. 31, 1968. This application June 4, 1973, Ser. No. 366,804

Int. Cl. B65g *47/18*

U.S. Cl. 198—52 **4 Claims**

1. A chain conveyor arrangement for conveying a plurality of containers such as cans arranged in a line comprising

two endless articulated link chains having a plurality of associated conveying caps secured to the links thereof,

said chains being spaced apart and substantially parallel along a conveying run thereof,

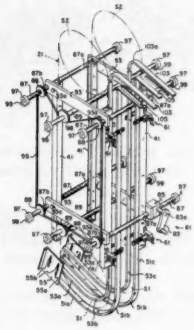
said sets of caps facing one another and being spaced apart, each of said caps having a conveying surface opposite said chain and which is unidirectionally tapered in the longitudinal direction of said chain to form a generally

sawtoothed discontinuous conveying surface for conveying a plurality of containers arranged in a line,

corresponding associated guides engaging the oppositely outer faces of said caps and maintaining said chain and associated caps in substantially parallel path spaced relation along and on opposite sides of a desired first article-conveying path,

second guides engaging said link chains and directing said link chains and associated caps along respective desired paths along and on opposite sides of a second desired article-conveying path,

said second guides being equally canted with respect to the longitudinal center line of said second desired article conveying path to thereby effect corresponding canted paths for said link chains and associated caps along said second article conveying path,



said second guides being equally arcuate along said second article conveying path and said second article conveying path being similarly arcuate,

said second guides being sprocket wheels having their axes inclined with respect to the longitudinal center line of said second article conveying path,

said sprocket wheel axes being substantially equally inclined with respect to the longitudinal center line of said second article conveying path,

and an article conveying chute disposed in feeding relation to said sets of caps in the zone of said second arcuate article conveying path and having its chute exit to said sets of caps adjacent the wider open portion of said second arcuate conveying path, the direction of feed of said chute being in the direction of convergence of said link chains and associated sets of caps along said second arcuate article conveying path.

3,858,712

METHOD AND APPARATUS FOR ALLOCATING INDIVIDUAL ITEMS ON CONVEYOR BELTS

Tony Sluysmans, Scerrebeck, Belgium, assignor to Sandco Ltd., Ottawa, Ontario, Canada

Filed Mar. 19, 1973, Ser. No. 342,445

Claims priority, application Germany, Apr. 22, 1972, 2219844

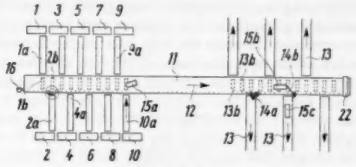
Int. Cl. B65g *37/00*

U.S. Cl. 198—78 **9 Claims**

1. Apparatus for allocating individual items spaced from one another on a conveyor means of the type which includes countable markings therealong and which is supplied by feeder means arranged along said conveyor means, each of said feeder means having an associated gate means for blocking each of said feeder means, comprising:

control means associated with each of said gate means for counting said markings,

release means associated with each of said gate means for releasing said gate means so as to permit the feeding of an item from said feeder means onto said conveyor means in response to said control means counting a predetermined number of markings, and



erasing means associated with each of said release means for erasing markings representing a predetermined counting unit along said conveyor means at the location of said gate means at which the item is released onto said conveyor means in response to said release means releasing said gate means.

3,858,713

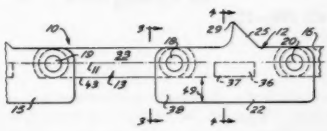
LOG FEED CONVEYOR FOR BANDMILL

Francis Edwin Allen, North Vancouver, British Columbia, Canada, assignor to Letson and Burpee Ltd., Vancouver, British Columbia, Canada

Filed Dec. 28, 1971, Ser. No. 213,139

Int. Cl. B65g *15/42*

U.S. Cl. 198—200 **6 Claims**



1. A conveyor chain having a central longitudinal axis within a central longitudinal plane, the chain being adapted to run on a complementary chainway, the chainway having an upper wall, and side walls spaced equally from the central longitudinal plane, spacing between the side walls defining width of the chainway; the chain having flanged links and connecting links with transverse axes normal to the chain longitudinal axis and in a plane parallel to the upper wall of the chainway, the flanged links alternating with the connecting links along the chain; each flanged link including:

a. a pair of spaced parallel side bars having opposite ends having transversely aligned bores, the side bars having spaced, parallel flanges having oppositely facing inner sidewalls spaced apart by a distance somewhat greater than the width of the chainway so as to straddle the side walls of the chainway and to provide clearance between the flanges and the chainway permitting axial sliding of the links on the chainway, the flanges extending downwards from the side bars to lower edges of the flanges spaced downwards from the upper wall of the chainway when the link engages the chainway at a depth sufficient to restrain the flanged link against rotation about the longitudinal axis, and maintain the flanged link within the central longitudinal plane, each side bar having an upwardly extending lug positioned above and transversely disposed from the wear block and adapted to penetrate a log and retain the log on the chain, each side bar, flange and lug have coplanar parallel inner and outer side walls,

b. a wear block extending between the side bars, the wear block having a lower surface serving as a wearing surface, which surface is adapted, under downward force closure arising from weight of material carried on the chain, to

bear against the upper wall of the chainway, the lower surface of the wear block being spaced between the lower edges of the flanges and the transversely aligned bores and having a relatively large surface area so as to result in relatively low bearing pressures,

and each connecting link having:

c. connecting means adapted to engage the flanged link, the connecting means having: opposite ends having a width to be accepted between the side bars of the flanged links; bores at the opposite ends adapted to register with the aligned bores of the flanged link; and a lower surface which surface, when adjacent links are aligned, is coplanar with the lower surface of the wear means and bears against the upper wall of the chainway, so as to restrain the flanged link against rotation about a transverse axis and support a portion of weight on the chain:

the chain further including:

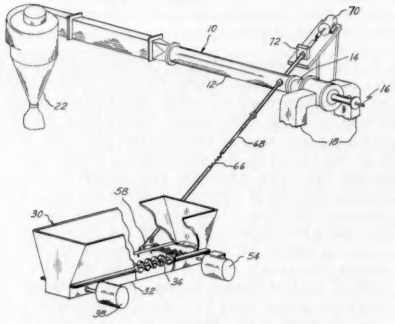
d. pins adapted to pass through the bores in register so as to hinge together the flanged and connecting links, so that motion of the chain along the chainway is essentially rectilinear motion of translation only, and, when required, the connecting link can rotate about a transverse axis relative to the flanged link permitting articulation of the chain.

3,858,714

METHOD AND APPARATUS FOR DELIVERING DAMP, GRANULAR SOLIDS

Julian G. Atwater, Chicago Heights, Ill., assignor to Swift and Company, Chicago, Ill.

Filed Jan. 22, 1973, Ser. No. 325,619
Int. Cl. B65g *33/14*
U.S. Cl. 198—213 **7 Claims**



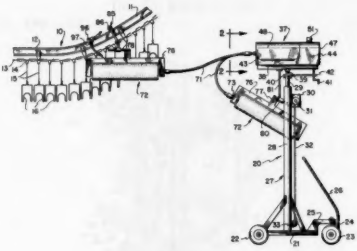
1. An improved method for delivering damp granular solids, said method comprising: compressing damp granular solids from a loose supply thereof into a compression zone; metering the compressed damp granular solids from said compression zone at a controlled uniform rate into a conveying path; towing the metered damp granular solids at a faster uniform speed along an open conveying path, said towing of said solids being within a conduit by a rotating flexible open helix wherein the helix carries substantially less than its capacity and wherein the pitch of the helix tends to increase by stretching when rotated; passing said damp granular solids into a window zone in said path; and discharging said damp granular solids from said path at said window zone.

3,858,715

SHACKLE CLEANING DEVICE

Bob J. Brock, 2909 Laramie Cir., and Othel E. Anderson, Rt. 4, both of Hattiesburg, Miss. 39401

Filed Apr. 5, 1973, Ser. No. 348,464
Int. Cl. B65g *45/00*; **A46b** *13/02*
U.S. Cl. 198—229 **8 Claims**



1. Apparatus for cleaning support members suspended from a conveyor which is movably carried along a conveyor support structure comprising a bracket mounted on the conveyor support structure, said bracket having a conveyor support engaging member supported across the top of the conveyor support structure, extension means selectively secured to the conveyor support engaging member and extending downwardly on at least one side of the conveyor, said extension means having a width adjusting member selectively secured generally perpendicularly thereto, an angle adjusting member selectively secured generally perpendicular to said width adjusting member, said angle adjusting member having a tubular support attached thereto in which a selectively removable brush support frame is swingably mounted, a cleaning brush rotatably mounted on said frame, and means for driving said brush, whereby said brush engages and cleans the support members as the conveyor moves the support members past said brush.

3,858,716

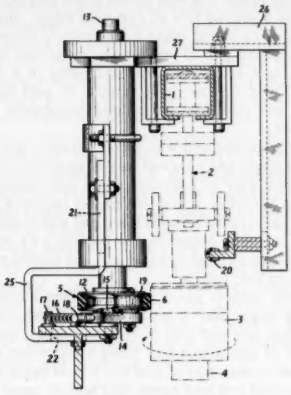
SPINNER ASSEMBLY MECHANISM

Dale George Frische, Belleville, Ill., assignor to Indian Head Inc., New York, N.Y.

Filed Nov. 8, 1973, Ser. No. 413,921
Int. Cl. B65g *47/24*
U.S. Cl. 198—241 **5 Claims**

1. A spinner assembly mechanism which comprises a track for supporting an overhead chuck conveyor having a plurality of spaced vertically retractable chucks with rotatable collars enclosing chuck fingers for suspending articles therefrom, a

continuous flexible drive belt having an inner course for frictional engagement with said rotatable collars to effect rotating



or spinning of the suspended articles, and operatively connected motive means for driving said belt.

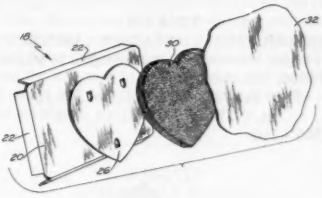
3,858,717
CONTAINER FOR PERISHABLE FOODS
Leo Peters, 750 Plymouth Rd., S.E., Grand Rapids, Mich. 49506
Filed Nov. 8, 1972, Ser. No. 304,778
Int. Cl. B65d *75/58*; **A47f** *10/00*
U.S. Cl. 206—44.12 **10 Claims**

FOR FRESHNESS SAKE
1. TAKE OLD STOCK FROM SHELF
2. CUT OPEN NEW CASE
LIKE THIS
FRONT
3. PUT NEW CASE ON SHELF
LIKE THIS
4. put OLD STOCK back (on top or on front
5. when half empty use PULL FORWARD TAB to move butter up front
LIKE THIS
BUTTER RAILS
KEEP FROZEN
FRONT

1. A container adaptable for displaying its contents on a retail store shelf comprising a shipping case dimensioned to fit onto the display shelf of grocery stores and having a bottom wall, a sleeve slidably supported on the bottom wall of the case whereby the contents of the case are moved as the sleeve is moved over the bottom wall, and a pull tab attached to the sleeve and lying flat along the bottom wall of the case and extending from the sleeve a sufficient distance so that it is covered by the contents of the case when the case is full but is visible when about one-quarter of the case's contents have been removed.

8. A combination shipping and display container for a plurality of stacked units arranged in rows, the container having top, bottom, front, rear, and opposite side walls, the top and front walls adapted to be removed when the container is used as a display container, a sleeve slidably supported by the bottom wall of the container, the sleeve having a bottom wall supported by the bottom wall of the container, a rear wall extending adjacent the rear wall of the container, and opposite side walls extending adjacent the side walls of the container, the bottom wall of the sleeve extending from the back wall of the container for only a portion of the length of the bottom wall of the container, and a pull tab secured to the bottom wall of the sleeve and extending over the bottom wall of the container toward the front wall.

3,858,718
DISPLAY BOX
Armand W. Roy, Plainville, Mass., assignor to Royal Hinge & Die Company, Plainville, Mass.
Filed Jan. 2, 1973, Ser. No. 320,607
Int. Cl. B65d *79/00*, *1/34*
U.S. Cl. 206—45.19 **4 Claims**



1. A display box construction comprising a base section, an insert member positioned in said section having a substantially planar top surface, and an article receiving pad assembly comprising a substantially rigid plate secured directly to said top surface in juxtaposition thereto, a sheet of resilient material positioned on top of said plate, said sheet having the same peripheral configuration as said plate, and a fabric like layer covering said resilient sheet and securing same to said plate, said insert member being of cardboard-like construction and having downwardly depending flanges at the side edges of said top surface whereby said top surface is maintained in spaced relation to the bottom of said base section, said plate being metallic and having integral lugs extending therefrom and penetrating through said top surface, said lugs being bent to retain said plate secured to said top surface.

3,858,719
HOLDER FOR WINDING OF RIBBON-LIKE MATERIAL
Jacques Harold Isaacs, Greenwich, Conn., assignor to Textron Inc., Providence, R.I.
Filed Jan. 29, 1973, Ser. No. 327,534
Int. Cl. B65h *75/06*; **B65d** *85/67*
U.S. Cl. 206—49 **10 Claims**

1. A holder for receiving and retaining a ribbon-like material comprising

a board having opposite sides, opposite ends and opposite faces, the opposite ends and the opposite faces for supporting a winding of the ribbon-like material;

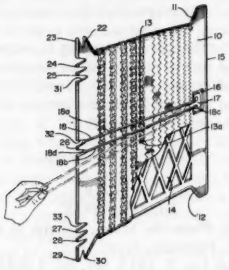
a first of the opposite sides having an enclosed opening formed therein;

a first tab formed within the enclosed opening on the first of the opposite sides of the board;

a second tab formed on the second of the opposite sides of the board; and

an elastic band having two looped ends wherein the two

looped ends extend around the respective first and second tabs and the elastic band extends across only one of



the opposite faces to retain a free end of the ribbon-like material.

3,858,720

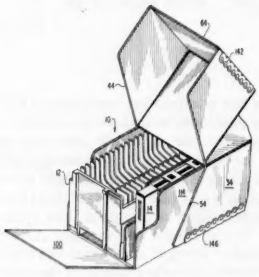
CURRICULUM CONTAINER ASSEMBLY

Philip B. Flagler, Moorestown, N.J., assignor to Media Systems Corporation, Moorestown, N.J.

Filed Feb. 23, 1973, Ser. No. 335,151

Int. Cl. B65d *1/36, 85/48, 85/67*

U.S. Cl. 206—216 **1 Claim**



1. A curriculum container assembly for enhousing a rectangular tray of diapositives in combination with a tape cassette comprising:

a rectangular top panel element having a first pair opposing edges and a second pair of opposing edges longer than said first pair of opposing edges;

hinge means extending transversely across said top panel element between said opposing long edges thereof in a posture closer to one of said first pair of opposing edges than the other one of said first pair of opposing edges;

first and second rectangular exterior side panels having a first pair of opposing edges and a second pair of opposing edges longer than the first pair of opposing edges, one of said second pair of opposing edges of each of said first and second exterior side panels being connected coextensively to respective second opposing edges of said top panel element, said first and second rectangular exterior side panels extending in a mutually parallel planar posture and perpendicular to the plane of said rectangular top panel element;

a cut line extending from said one edge of said second pair of opposing edges of each of said first and second exterior side panels, at a position adjacent the end of said hinge means extending transversely across said top panel element, to the other edge of said second pair of opposing edges of each of said first and second exteri or side panels;

a rectangular access end wall having a first pair of opposing edges and a second pair of opposing edges, one of said first pair of opposing edges coextensively connected to one of said first pair of opposing edges of said top panel element, said access end wall extending in a mutually perpendicular posture with respect to said top panel element and said first and second rectangular exterior side panels;

a rectangular closed end wall panel having a first pair of opposing edges and a second pair of opposing edges, one of said first pair of opposing edges coextensively connected to the other of said first pair of opposing edges of said top panel element, said closed end wall panel extending in a mutually perpendicular posture with respect to said top panel element and said first and second rectangular exterior side panels;

a rectangular bottom panel element having a first pair of opposing edges and a second pair of opposing edges longer than said first pair of opposing edges, one of said first pair of opposing edges being coextensive with and connected to the other of said first pair of opposing edges of said closed end wall panel, said bottom panel element extending in a mutually perpendicular posture with respect to said closed end wall panel and said first and second exterior side panels and in a spaced parallel posture with respect to said top panel element;

a generally rectangular access end wall flap having a first pair of opposing edges and a second pair of opposing edges, one of said first pair of opposing edges coextensively connected to the other of said first pair of opposing edges of said bottom panel and being operable to pivot about the connection from a posture coplanar with said bottom panel element to a posture mutually perpendicular to said bottom panel element and said first and second exterior side panels;

first and second generally rectangular interior side panels having a first pair of opposing edges and a second pair of opposing edges longer than said first pair of opposing edges, one of said second pair of opposing edges of each of said first and second interior side panels being connected coextensively to respective ones of said second pair of edges of said bottom panel element, said first and second interior side panels extending in a mutually parallel planar posture with said first and second exterior side panels;

a sculptured recess formed in each of said first and second generally rectangular interior side panels within the edge of said first pair of opposing edges of each of said first and second generally rectangular interior side panels adjacent said access end wall flap, for providing access to a rectangular tray of diapositives and a tape cassette positioned within said curriculum container assembly;

means for maintaining said rectangular top panel element, said first and second rectangular exterior side panels, said rectangular access end wall, said closed end wall panel, said rectangular bottom panel, said generally rectangular access end wall flap and said first and second generally rectangular interior side panels in the previously recited structural postures for forming a generally hollow rectangular box suitable to enhouse a rectangular tray of diapositives in combination with a tape cassette and for providing ready access thereto by flipping up said access end wall pivoted about said hinge means extending transversely across said top panel element and flipping down said access end wall flap; and,

insert means operable to be positioned within the interior of said curriculum container assembly for separating a rectangular tray of diapositives and a tape cassette and for maintaining the cassette tape in a posture for ready removal at the access end of said container assembly,

said insert means comprising:

a rectangular base panel having a first pair of opposed

edges and a second pair of opposed edges longer than said first pair of opposing edges, said base panel being operable to overlay said bottom panel element of said container assembly and further being operable to be connected to said bottom panel element;

a generally rectangular partition panel having a first pair of opposing edges and a second pair of opposing edges longer than said first pair of opposing edges, one of said second pair of edges being connected to one of said second pair of opposing edges of said rectangular base panel, said partition panel projecting in a posture perpendicular to said insert rectangular base panel;

tab means connected to a lateral surface of said partition panel and extending normally therefrom for forming a stop abutment for a tape cassette to maintain the cassette in a posture for ready removal at the access end of said container assembly; and,

a sculptured recess formed within one of said first pair of opposed edges of said generally rectangular partition panel, positioned adjacent the access end of said container assembly for providing access to a rectangular tray of diapositives and a tape cassette positioned within said container assembly.

3,858,721

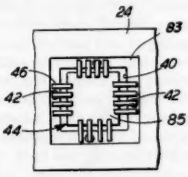
LOADING OF COMPLIANT TAPE

John A. Boyer, Allentown; David P. Ludwig, and Friedrich Zwickel, both of Whitehall, all of Pa., assignors to Western Electric Company Incorporated, New York, N.Y.

Division of Ser. No. 185,648, Oct. 1, 1971, Pat. No. 3,785,903. This application Aug. 24, 1973, Ser. No. 391,436

Int. Cl. B65d *85/30, 73/02, 75/22*

U.S. Cl. 206—330 **3 Claims**



1. A package for devices which comprises a continuous tape having periodically spaced cavities and embossed depressions about such cavities formed therein, each of said cavities being capable of accommodating one of said devices and each of said depressions being large enough to accommodate physical features extending laterally from such device beyond the boundaries of said cavities, said depressions having an adhesive therein at precise locations corresponding to the position of the physical features extending from the devices to retain said features in said depressions and the respective devices in said cavities.

3,858,722

NEEDLE DISPENSER

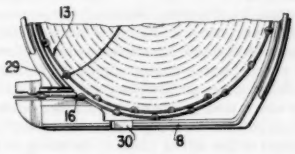
Robert V. Haas, Colonia, N.J., assignor to The Singer Company, New York, N.Y.

Filed May 21, 1969, Ser. No. 826,486

Int. Cl. B65d *83/02, 85/24*

U.S. Cl. 206—380 **9 Claims**

1. A dispenser for elongated articles separately prepackaged in a strip formed of a plurality of packages spaced in succession and detachably joined at transverse regions, comprising, a housing for storing a length of said strip, a dispensing channel in strip-receiving relationship with said housing through which a leading end of said strip is adapted to project for withdrawal from said housing, first and second throats spaced apart within said channel a distance equal to the spacing between packaged articles in said strip, one of said throats being located within the channel in advance of the second of said throats in the direction of withdrawal from the housing, each throat providing a constriction for preventing passage of said articles therethrough, each throat readily yieldable to enlarge the constriction and allow one article to pass therethrough upon application of a force to said leading end of



strip, whereby one package is withdrawn through said channel to be detached along a transverse region from the remainder of said strip, the second throat providing a constriction for preventing passage therethrough in a direction opposite to withdrawal from said housing of an article that has not been withdrawn through said first throat upon withdrawal through said first throat and detachment from said strip of a preceding packaged article.

3,858,723

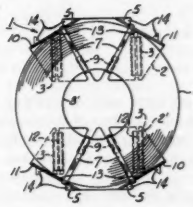
ADJUSTABLE PALLET

Le Roy Weiss, 1812 Trayone Dr., Allegheny, Pa. 15241

Filed Oct. 16, 1973, Ser. No. 406,811

Int. Cl. B65d *71/04, 19/26*

U.S. Cl. 206—386 **9 Claims**



1. An adjustable and reuseable pallet in combination with an article load having a base with a curvilinear outside surface comprising:

an opposed pair of independent load bearing decks, each said deck having respective independent runner supports thereunder,

said article base resting on both of said decks,

upwardly turned opposed outside wall means on each of said decks contacting opposite outside surface portions of said article and confining the same therebetween,

each of said wall means contacting the outside curvilinear surface of said article at a plurality of different tangential locations,

and at least two load securing bands securing said decks to said article load under tension such that said wall means are maintained in continuous contact with said article load and at all of said different tangential locations.

3,858,724

METHOD OF CHECKING ELECTRIC PARAMETERS OF FERRITE CORES OF MEMORY STACK

Jury Alexandrovich Burkin, Tsvetnoi proezd 29, kv. 24, and Jury Emelyanovich Seleznev, Vesenny proezd 4a, kv. 16, both of Novosibirsk, U.S.S.R.

Filed Nov. 14, 1973, Ser. No. 415,904

Claims priority, application U.S.S.R., Dec. 11, 1972, 1858159

Int. Cl. B07c

U.S. Cl. 209—72 2 Claims

1. A method for checking electrical parameters of ferrite cores of a memory stack comprising the steps of: threading ferrite cores with Y and X coordinate wires to form strings of the ferrite cores; placing each string of the ferrite cores in a thermostatic chamber; transmitting test pulses through the Y coordinate wires; reading out pilot remagnetization signals of the ferrite cores from the X coordinate wire; checking electrical parameters of the ferrite cores in the string at a temperature varied in accordance with a preset program to determine the existence of defective cores thereon; and removing defective ferrite cores so determined.

3,858,725

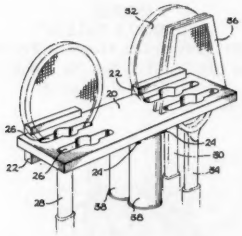
TENNIS EQUIPMENT RACK

Eli Pietrack; Jon Cookler, both of Los Angeles, and Barry Nadell, Canoga Park, all of Calif.

Filed Nov. 12, 1971, Ser. No. 198,309

Int. Cl. A47f 7/00

U.S. Cl. 211—13 3 Claims



1. A tennis equipment rack comprising a horizontal, substantially rectangular member of substantially uniform thickness having an even plurality of openings vertically therethrough, each for receiving a tennis racket, each of said openings having a central opening for allowing the passage of a tennis racket handle therethrough, with symmetrical slot-like openings extending in opposing directions therefrom to allow the partial passage of the bulbiferous portion of a tennis racket therethrough, each of said slot-like openings terminating at a hemi-cylindrical surface, said openings being equally disposed adjacent each end and generally parallel to the length of said rectangular member,

at least one pair of opposingly disposed rail members attached to the bottom surface of said horizontal member, generally in the center portion thereof, each of said rail members having an integral downward projecting member and an integral horizontally projecting member depending from said downward projecting member so as to define a horizontal channel, said rail members comprising each of said pairs being disposed with said channels in a facingly disposed relationship at a predetermined separation, whereby cans of tennis balls may be supported on the rim adjacent the top thereof by the engagement of said rim with said channels,

a pair of mounting members, each of said mounting members being a substantially rectangular member of generally uniform thickness and having a slot disposed along the length and generally parallel to the sides thereof, said slot having a depth approximately one half of the thickness of said mounting members and a width substantially equal to the thickness of said horizontal member, said mounting members being disposed in spaced apart relationship with the rear edge of said horizontal member being disposed and fastened within said slots in said mounting members, said mounting members each having at least one hole therein for receiving a means for fastening said rack to a wall.

3,858,726

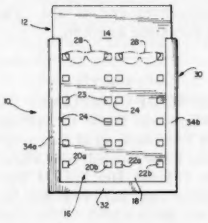
EYEGLASS HOLDER

David Rosenwein, 137 S. Harper Ave., Los Angeles, Calif. 90047

Continuation of Ser. No. 253,798, May 16, 1972, abandoned. This application Nov. 27, 1973, Ser. No. 419,189

Int. Cl. A47f 7/02

U.S. Cl. 211—13 3 Claims



1. An eyeglass display holder in combination with a plurality of pairs of eyeglasses comprising an elongated generally flat, rigid self-supporting display card, vertical rows of pairs of openings, the spacing of said pairs of openings being equal to the spacing between the temples of each pair of said eyeglasses, and receiving the temples thereof through a pair of said openings, the temples being folded one upon the other retaining the eyeglasses on the card, means restricting opening of the folded temples of the card supported eyeglasses including; a frame slidably receiving said card, said frame including a back wall of substantially the same size and shape as the display card, vertical side members and a base member including means for supporting the eyeglasses display holder in an upright position which is adapted to seat on the top of a counter, said side members being spaced apart a distance only slightly less than the width of the card, the frame having an open front wall enabling the frames and lenses of the glasses to be viewed while the temples thereof are folded behind the card to prevent pulling of the glasses off of the card, said side members and said base member being grooved, said grooves slidingly receiving and housing the bottom and side edges of said display card in spaced relationship with said back wall creating a spacing between the card and the back wall accommodating the folded temples of the displayed glasses in abutting relationship with the back wall whereby said glasses cannot be removed from the card without first at least partially removing the card from the frame.

3,858,727

BULLETIN BOARD ASSEMBLY

Leo Levko, 146 W. 79th St., New York, N.Y. 10024

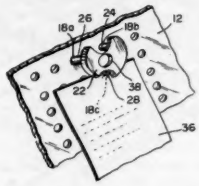
Filed Dec. 1, 1972, Ser. No. 311,327

Int. Cl. A47f 5/08

U.S. Cl. 211—89 9 Claims

1. A bulletin board assembly comprising a bulletin board having a rigid panel and a plurality of perforations formed in said panel and arranged in a uniform pattern of evenly spaced perforations and a mounting device adapted to be removably mounted on said bulletin board for impaling an object and supporting said object thereon, said mounting device includ-

ing a rigid body member having a flat surface, a sharppointed pin projecting perpendicularly from said flat surface, and at least one peg projecting perpendicularly from said flat surface and spaced from said pin, said peg being sized for insertion through a selected perforation on said panel with a friction fit therein for attaching said mounting device on said panel, said pin being of lesser thickness than said peg and being located



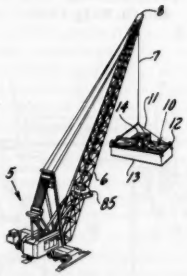
on said body member at such a position that said pin registers with another perforation in said panel when said peg is inserted in said selected perforation and said mounting device is pressed inwardly toward said board, whereby said pin will pass freely and centrally through said other perforation with the body of said pin out of engagement with the body of said panel.

3,858,728

RADIO CONTROL CRANE AND SPREADER SYSTEM FOR HANDLING CONTAINERS

Jack E. Fathauer, Roxboro, N.C., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jan. 11, 1974, Ser. No. 432,768
Int. Cl. B66c *3/00*
U.S. Cl. 212—42 **6 Claims**



1. Equipment for handling cargo containers comprising:

a spreader having a frame and power consuming service mechanism comprising latching means for interlocking with corner portions of a container, said spreader frame providing a mounting station;

crane means including adjustable hoisting means connected to the spreader;

a self contained power unit detachably received in said mounting station comprising a frame, fuel storage means, combustion engine means connectd in fuel-receiving relation with said storage means, power converting and transmitting means in intermediate connected relation with said power consuming service means and said engine means, electrical control means contained in said transmitting means, ultra high frequency radio receiving and signal amplifying means electically connected with said control means and having an antenna, said control means being electrically connected to said receiving and amplifying means for response to signals therefrom;

said power converting and transmitting means including electrical generating means in driven relation with said engine means and in power supplying relation with all of said electrical means carried on said power unit;

ultra high frequency radio transmitting means including an antenna mounted on said crane means in substantially structurally unobstructed relation with said first mentioned antenna; said mounting station is an upward facing platform having surfaces complementary to undersurfaces of said frame of the power unit;

said power unit frame and said spreader frame comprise cooperating fastening means for securing said power unit to said platform; and

said power converting and transmitting means comprises service lines extending from the power unit to said power consuming service means of the spreader, and quick disconnect couplings in said lines and

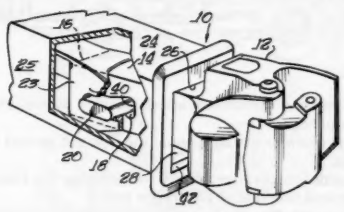
manual signal means electrically connected with said radio transmitting means for operating said power consuming service mechanism through said radio transmitting and receiving means.

3,858,729

RAILWAY COUPLER SHANK KEYSLOT CONTOUR

Russell George Altherr, Munster, Ind., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Apr. 11, 1973, Ser. No. 349,995
Int. Cl. B61g *7/00*
U.S. Cl. 213—64 **1 Claim**



1. In a railway coupler shank having a longitudinal axis extending the length of said shank from front to rear, the improvement comprising; a substantially horizontal keyslot in the rear portion of said shank extending between the vertical sides and through said shank perpendicular to said longitudinal axis for receiving a key attaching said shank to a draft gear yoke and extending through a slot in the sides of a striker casing; said keyslot having spaced upper and lower surfaces, said upper surface being substantially parallel to the longitudinal axis of said coupler shank and said lower surface diverging downwardly and forwardly away from said upper surface, said upper and lower surfaces merging with forward and rear bearing surfaces.

3,858,730

FOUR-WHEEL DRIVE LIFT TRUCK

Norman Dean Oswald, Duncanville, and Harry S. Mankey, Dallas, both of Tex., assignors to Standard Manufacturing Company, Incorporated, Dallas, Tex.

Filed July 16, 1973, Ser. No. 379,597
Int. Cl. B66c *23/56*
U.S. Cl. 214—1 D **8 Claims**

1. A lift truck comprising:

a frame including a forward U-shaped portion comprising a pair of substantially parallel, longitudinally extending arms and a transversely extending base interconnecting the rear ends of the arms;

a pair of front steering wheels mounted at the front ends of the arms of the U-shaped portion of the frame for supporting the front end of the lift truck;

a linkage including portions extending along the arms and a portion extending along the base of the U-shaped por-

tion of the frame for maintaining the steering wheels in a parallel relationship with respect to the frame;

a prime mover mounted on the frame to the rear of the base of the U-shaped portion thereof;

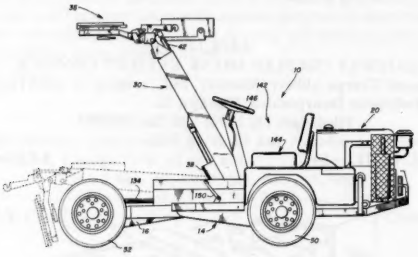
transmission means operatively connected to the prime mover;

a pair of non-steerable rear wheels operatively connected to the transmission means and hence to the prime mover for actuation thereby;

drive means extending along each side of the frame for selectively drivingly coupling the rear wheel on each side of the lift truck to the front wheel on the same side of the lift truck so that the lift truck is propelled by means of both the rear wheels and the front wheels;

said drive means on each side of the frame comprising a chain and sprocket drive including:

a first sprocket mounted for rotation with one of the rear wheels;



a cross shaft comprising interconnected second and third sprockets;

a first chain extending around the first and second sprockets;

a fourth sprocket operatively connected to the front wheel on said one side of the frame; and

a second chain extending around third and fourth sprockets; the U-shaped portion of the frame, the front steering wheels, the linkage and the drive means thereby defining an entirely opened area between the arms of the U-shaped portion of the frame;

a boom pivotally supported on the base of the U-shaped portion of the frame for vertical manipulation in said open area; and

an operating compartment positioned on the frame to the rear of the base of the U-shaped portion thereof and including means for manipulating the linkage to control the orientation of the front steering wheels.

3,858,731

IRRIGATION PIPE HANDLING APPARATUS

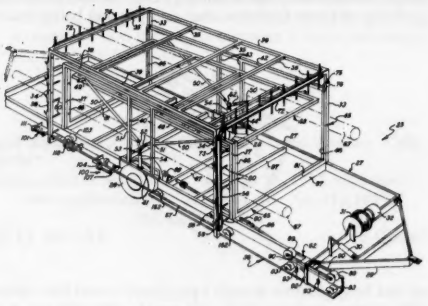
Stanley E. Briggs, Rt. 1, Hesston, Kans. 67062

Filed Dec. 5, 1973, Ser. No. 421,982

Int. Cl. B60p *1/00*

U.S. Cl. 214—1 PA **28 Claims**

1. A pipe handling apparatus comprising a wheeled trailer adapted to be towed along a string of pipe consisting of separable pipe sections having interfitting bell and spigot ends, means to adjust the longitudinal inclination of the trailer so that one end thereof may be positioned close to the ground, a first power pipe feeding and guiding unit on said trailer near said one end to engage pipe sections and feed them longitudinally of the trailer while the trailer is being drawn lengthwise of said string, a second intermittently operable feeding and guiding means for pipe sections on said trailer spaced longitudinally of said first feeding and guiding unit and adapted to feed pipe sections at a greater rate of movement than said first unit to separate or assemble said bell and spigot ends, substantially vertical and horizontal pipe section conveyor means on said trailer to elevate separated pipe sections and transport them laterally from one side of the trailer to a position substantially directly thereabove, vertically movable pipe supporting platform means on the trailer below said horizontal conveyor means and receiving layers of pipe sections from the



horizontal conveyor means, and a pipe rack removably mounted on the trailer adjacent to said platform means and receiving said layers of pipe sections in stacked relation and confining them when said platform means is in a lowered position.

3,858,732

MAGAZINE FOR STACKABLE TRAYS

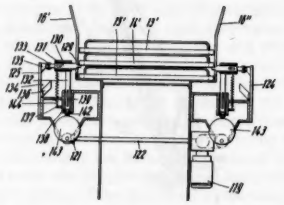
Kate Kemper, Wybuelstrasse 6, 8702 Zurich, Zollikon, Switzerland

Filed Mar. 7, 1972, Ser. No. 232,574

Claims priority, application Germany, Mar. 9, 1971, 2111223; May 10, 1971, 2122968

Int. Cl. B65g *59/06*

U.S. Cl. 214—8.5 K **11 Claims**



1. A magazine for stackable trays having a storage means for receiving the trays in a vertically stacked condition; stack support means for engaging the lowermost tray of the stack and for vertically moving the latter; means for moving said stack support means in a vertical direction; means for moving said stack support means out of and into the vertical path of travel of the tray stack, whereby in one cycle of operation in succession the tray stack is lowered by the stack support means engaging the lowermost tray, the lowermost tray is released and the next to the lowermost tray is engaged by the stack support means and the tray stack is raised for separating the lowermost tray from the tray stack; and removing means for moving the lowermost tray away from below the tray stack subsequent to its separation from the tray stack; the improvement comprising in combination:

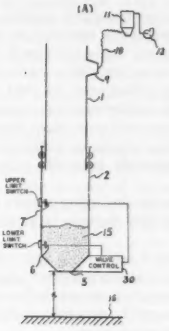
a. a first member arranged solely for vertical linear reciprocation, said first member having a first or highest position, successively lower second and third positions and a fourth or lowest position;

b. a guide means affixed to said first member for movement therewith as a unit;
c. a second member arranged solely for horizontal linear reciprocation and supported by said guide means, said second member having a support surface for engagement with the lowermost tray of said stack for supporting the latter, said first and second members and said guide means forming said stack support means;
d. drive means coupled to said first member for moving the same, said drive means forming said means for moving said stack support means in a vertical direction;
e. a follower roller connected to said second member; and
f. cam means engaged by said follower roller for linearly moving said second member into a first position and a second position, in said first position of said second member the said support face thereof is disposed below the lowermost tray of said stack in the travelling path thereof, in said second position of said second member the said support face thereof is laterally withdrawn from said travelling path, said cam means having
1. a first stationary cam face so arranged that it locks said second member in its said first position when said first member is in said highest position, whereby said tray stack is supported by said support surface of said second member vertically above and out of engagement with a tray supported on said removing means, said first stationary cam face lying in a vertical plane and extending below the height of said first position of said first member;
2. a second stationary cam face so arranged that it moves said second member from its said first position to its said second position as said first member moves downward from its said third position to its said fourth position, said second stationary cam face extending from the height of said third position of said first member in a direction downward and away from the travelling path of said first member at least until the height of said fourth position of said first member, said second stationary cam face being intersected at the approximate height of said third position of said first member by the vertical plane containing said first stationary cam face;
3. a third stationary cam face so arranged that it moves said second member from its said second position to its said first position as said first member moves upward from its said second position to its said first position, said third stationary cam face adjoining said first stationary cam face and extending in a direction downward and away from the travelling path of said first member at least until the height of the second position of said first member;

whereby any selected point on said second member describes a closed path enclosing an area lying in a vertical plane, as said first member moves from its said first position to its said fourth position and back into its said first position during one cycle of operation.

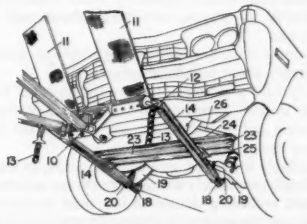
3,858,733
DEVICE FOR LOADING BULK MATERIALS
Akira Morioka, Sagamihara, and Hiroshi Iwasaki, Soka, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed June 20, 1972, Ser. No. 264,427
Claims priority, application Japan, Dec. 24, 1971, 46-1731
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 CA **8 Claims**

1. A device for loading bulk materials comprising a flexible telescopic chute defined by inner and outer tubes relatively telescopically fitted one over the other,. means disposed in the lower portion of said telescopic chute in vertically spaced apart relation for detecting the upper and lower limit positions of the bulk materials in said telescopic chute and a driving device for pulling up said chute, said driving device being controlled by said detecting means whereby the bulk in said



chute is maintained between the upper and lower limit positions while the bulk is being loaded.

3,858,734
VEHICLE TOWING DEVICE
Gerald E. Holmes, Chattanooga, Tenn., assignor to Ernest Holmes Company, Chattanooga, Tenn.
Filed Jan. 22, 1973, Ser. No. 325,868
Int. Cl. B60p *3/12*
U.S. Cl. 214—86 A **2 Claims**



1. A hitch for lifting and towing one end of a vehicle comprising a transverse tow bar supported by a towing truck; a pair of rigid elongated hooks adapted to hook around suspension members of the vehicle and a pair of spaced rigid longitudinal supporting members of rectangular and tubular shape having a top and sides, said hooks telescoping within said longitudinal members and rigidly supporting each other, the longitudinal members being attached to the transverse bar; the longitudinal members having spurs adjacent one end extending perpendicularly upward to cooperate with the hooks in holding firmly suspension members of the vehicle; and at least one transverse support member attached by a slidable fitting to the sides and top of each longitudinal member whereby the longitudinal members and the transverse support member are relatively adjustable.

3,858,735
TIRE MANIPULATING APPARATUS
Francis L. Zrostlik, Garner, Iowa, assignor to Iowa Mold Tooling Co., Inc., Garner, Iowa
Filed Apr. 16, 1973, Ser. No. 351,445
Int. Cl. B60g *7/00*
U.S. Cl. 214—331 **8 Claims**

1. A tire changing fixture adapted to be mounted on a movable boom for use in the repair or changing of extremely large and heavy tires, comprising

means defining a variable width jaw assembly having opposed gripping surfaces adapted to be moved toward and away from each other for gripping a tire about its cylindrical periphery;

first motor means connected to said jaw assembly gripping surfaces and selectively operable to move said gripping surfaces toward and away from each other;

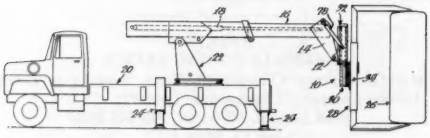
mounting means mounting said jaw assembly, said mounting means including a first pivot adapted to be connected to a movable boom so that said jaw assembly may be rotated about a first pivot axis coincident with said first pivot;

means on said mounting means defining a second pivot axis for said jaw assembly generally transverse to said first pivot axis;

said mounting means including means mounting said jaw assembly for pivotal movement about said second pivot axis;

second motor means selectively operable to pivot said jaw assembly about said second pivot axis;

means on said mounting means defining a third pivot axis for said jaw assembly generally transverse to both said first and second pivot axes;



said mounting means including means mounting said jaw assembly for pivotal movement about said third pivot axis; and

third motor means selectively operable to pivot said jaw assembly about said third pivot axis

whereby said jaw assembly may be mounted for substantially universal movement on a boom to facilitate the gripping and relocating of a tire during a tire changing or repair operation;

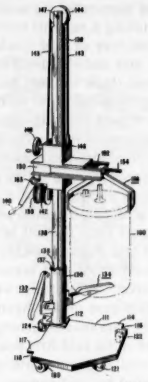
said variable width jaw assembly including at least a pair of generally oppositely extending tubular members secured to said mounting means, and at least a pair of L-shaped jaws, one for each of said tubular members and telescopingly received therein, said gripping surfaces being defined by the bights of said L-shaped jaws; and said motor means comprising at least a pair of hydraulic cylinders, one for each of said tubular members, and located within a respective one of said tubular members, each hydraulic cylinder being operatively connected to its tubular members and the associated L-shaped jaw whereby operation of said hydraulic cylinders will move said gripping surfaces toward and away from each other.

3,858,736
PORTABLE HOIST

Ralph Clark French, Jr., Andover, and Edwin Peter Utz, Florham Park, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 6, 1974, Ser. No. 440,150
Int. Cl. B66f *9/18*
U.S. Cl. 214—671 **15 Claims**

1. Apparatus for transporting an object between different locations comprising a movable base having an extension portion thereof adapted to rest on an adjacent weight bearing surface; a vertical pole rotatably supported on said base; means attached to said pole for holding said object adapted to horizontally and vertically translate said object with respect to said pole; and an extendible member attached to said base adapted to extend in a predetermined direction from said pole to fixedly rest on said adjacent weight bearing surface, said object being stably supported between said base extension

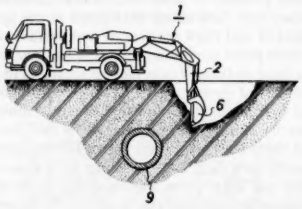


portion and said extended member while being moved between said base and said adjacent weight bearing surface.

3,858,737
EXCAVATOR

Rikizo Senoo, 2-14, Nihombashi Kakigara-cho, Chuo-ku, Tokyo, Japan

Filed Nov. 27, 1972, Ser. No. 309,888
Claims priority, application Japan, Dec. 2, 1971, 46-113355[U]
Int. Cl. EO2f *3/86*
U.S. Cl. 214—762 **3 Claims**



1. An excavator having a bucket arm and which is provided with a buried metal detector including a transmitter, a receiver and an antennae, in which said antennae comprises three elements; said three elements being positioned on said bucket arm of said excavator and are disposed in three-dimensional mutually perpendicular relationship with each other.

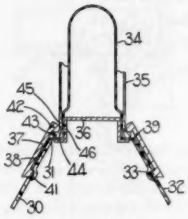
3,858,738
INFANTS FEEDING BOTTLES

Eric Kenneth Hurst, Flat 5, 10 Lowndes Square, London S.W., England

Continuation of Ser. No. 118,924, Feb. 25, 1971, abandoned. This application Mar. 14, 1973, Ser. No. 341,116
Claims priority, application Great Britain, Mar. 4, 1970, 10529/70; Sept. 19, 1970, 44739/70
Int. Cl. A61j *9/00*
U.S. Cl. 215—11 C **1 Claim**

1. A disposable infant's feeding bottle comprising a container for liquid, said container having an outlet opening, a seating surrounding said outlet opening, a resilient teat provided with an outlet orifice, said teat having a flange portion engaging said seating and secured on said container for creating a seal to contain the liquid in said container, a removable

cap enclosing said teat, said cap having an internal annular portion engaging a further portion of said teat for creating a further seal for the enclosure for said teat, and closure means sealing against communication between the interior of said container and the interior of said teat, said closure means being frictionally engaged in the interior of said teat and being displaceable by manipulation of said cap to remove said sealing means from its sealing position, such manipulation being carried out with said cap covering said teat, said cap and teat flange portion being secured to said container by a single retaining ring, said cap having a lip which engages a flange on said closure means through said teat and, by application of pressure to said cap, in a direction normal to said flange, drives said closure means into the interior of said container.

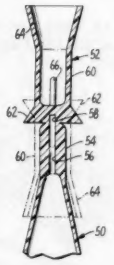


3,858,739

BREAKAWAY NECK CONTAINER WITH INTEGRAL CAP

Lloyd S. Turner, Los Gatos, and Daniel G. Vaughan, Monte Sereno, both of Calif., assignors to Barnes-Hind Diagnostics, Inc., Canovanas, P.R.

Filed Mar. 5, 1973, Ser. No. 338,379
Int. Cl. B65d *1/08, 17/24*
U.S. Cl. 215—32 **1 Claim**



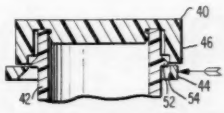
1. An article of the type described comprising a one-piece soft plastic container and sealing member, said container having a frusto-conical hollow upper end which has integral therewith an elongated cylindrical dropper tip, the tip having a central passageway extending therethrough, the passageway having a length which is several times that of the diameter of the tip, the tip having a rounded end surface suitable for eye dropper usage, a sealing member integral with the end of the tip having a breakaway connection with said tip which terminates radially inside of the rounded end surface, the sealing member comprising a frusto-conical lower part disposed with its wide end at the dropper tip, said wide end having a diametral dimension which is substantially greater than the diametral dimension of said dropper tip, the narrow upper end of the frusto-conical lower part of the sealing member being integral and co-diametral with an elongated hollow cylindrical intermediate part having an internal length of at least the length of said dropper tip and having an internal diameter substantially corresponding to the outside diameter of said dropper tip, the outer end of said intermediate part being integral with an inverted hollow frusto-conical part having an angle of generation which equals or exceeds that of the frusto-conical upper end of the container, there being integral with the narrow end of the frusto-conical lower part of the sealing member a central cylindrical elongated member which projects into the intermediate part of the sealing member and which has a diameter substantially corresponding to that of the passageway of the dropper tip, said sealing member having an overall length which is substantially greater than the length of said dropper tip, whereby said intermediate part serves as a grip for the application of force to effect the rupture of said breakaway connection and the removal of the sealing member from said container, and said frusto-conical lower part serves to prevent contact of the user's fingers with the dropper tip while said rupture and removal is being effected, and whereby said removed sealing member may then be turned end to end and emplaced in enclosing relation to the dropper tip and to an adjacent portion of said frusto-conical hollow upper end of the container, said elongated member then extending into the passageway of said tip and sealing the same, said intermediate part then housing said tip and forming a seal at the outer surface of said tip, and said hollow frusto-conical part then shielding said adjacent portion of said frusto-conical hollow upper end of the container against manual contact.

3,858,740

LOCKING DEVICE FOR CONTAINERS

Pierre J. Lestaevel, 2727 29th St., N.W., Washington, D.C. 20008

Filed May 4, 1973, Ser. No. 357,143
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—216 **6 Claims**



1. A container having cover means, said container having a neck defining an opening into said container, said cover means having a circumferential flange extending about said neck, complementary fastening means on said cover means and said neck, locking ring means, pivot means for pivotally connecting said ring means on said cover flange for movement transversely relative to said neck and cover flange, complementary locking means on said neck whereby upon operative locking engagement of said locking ring means with said complementary locking means, manipulation of said fastening means to remove said cover means is prevented.

3,858,741

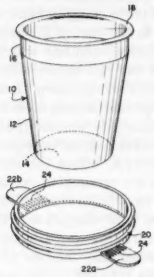
COMPOSITE PLASTIC BOTTLE AND TAMPERPROOF CLOSURE THEREFOR

Harold Byron Smith, Sr., Barrington, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 14, 1974, Ser. No. 433,337
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—216 **4 Claims**

4. A tamperproof package including a container body having a collar member rotatably mounted on the container in the vicinity of its upper open end which is provided with a rim, a cover element consisting of a hollow body providing a cover surface and a depending skirt, said skirt being internally configured to cooperate with a configuration on the outer surface of the collar member to permit rotary association of the two elements, tab means provided on the collar which extend laterally outwardly therefrom and provided with locking projections which are exposed in a direction toward the rim of the

container, and complementary locking projections on the bottom open margin of the skirt adapted to cooperate with the



locking projections on the tab to rotatably couple said cover element and said collar in mounted position on said container to provide the aforesaid tamperproof package.

3,858,742

BOTTLE CAP

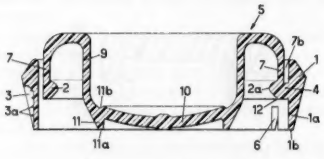
Jean Grussen, Neuilly-sur-Seine, France

Filed Apr. 9, 1973, Ser. No. 349,413

Claims priority, application France, Feb. 16, 1973, 73.05671

Int. Cl. B65d *41/48*

U.S. Cl. 215—253 **7 Claims**



1. In a one-piece bottle cap made of plastic material having a depending external skirt, an internally projecting retaining ring on said external skirt, and a reinforcing ring encircling said retaining ring which may be used as a cap-removing ring and is attached to said cap by an integral hinge, the improvement according to which said reinforcing ring projects downwardly beyond the lower edge of the external skirt of said cap, and the external surface of the lower part of said reinforcing ring tapers inwardly toward a thin lower edge adapted to approach an enlarged section of the neck of a bottle carrying said cap, so as to inhibit the insertion of a finger between said edge of said reinforcing ring and said bottle neck.

3,858,743

TAMPERPROOF PACKAGE

George V. Mumford, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 15, 1973, Ser. No. 406,645

Int. Cl. B65d *41/04, 55/02*

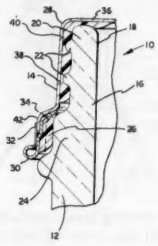
U.S. Cl. 215—329 **5 Claims**

1. A tamperproof package comprising, in combination: a container, a retaining ring, a closure, and a tamper-indicating tape;

a container having a neck portion terminating at its end in an annular rim defining the periphery of an open mouth, the outer surface of said neck having at least one thread member formed therein adjacent to and axially spaced from said open mouth and at least one lug member formed therein adjacent to and axially spaced from said threaded member;

a retaining ring being lined with plastisol and positioned in overlying relationship with the lug member on the neck portion of said container so that said plastisol hardens around said lug to prevent rotation of said retaining ring relative to said container;

a cap member including a top panel which covers the open mouth of said container and an annular depending skirt



portion connected to the marginal edge of said top panel and positioned in overlying relationship with respect to the neck portion of said container, said cap member being lined with plastisol which flows around said thread member to form a mating camming surface for removal of said cap from said container;

and a length of tamper-indicating tape positioned around said package in contact with said retaining ring and said cap to prevent removal of said cap without prior removal of said tamper-indicating tape.

3,858,744

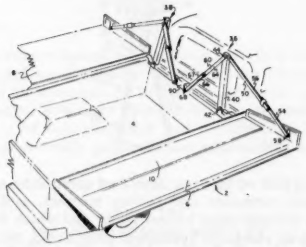
SUPPORT MEANS FOR HOLDING THE COVER OF A LOAD CARRYING BOX IN DIFFERENT POSITIONS

Clarence F. Garvert, 1013 N. 2nd St., Garden City, Kans. 67846

Filed Oct. 16, 1972, Ser. No. 297,768

Int. Cl. B65d *43/24*

U.S. Cl. 217—60 G **10 Claims**

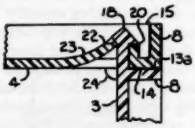


1. In combination with a cover for a load carrying box: said cover including a panel, said panel being hinge mounted to a frame and being moveable from a horizontal position enclosing said box to a vertical position and then to an outward horizontal position relative to said box, a support means to secure said panel in said vertical or outward horizontal positions, said support means including first and second braces and a strut, said strut pivotally secured at one of its ends to said frame, said first brace secured at one of its ends to said panel, said second brace secured at one of its ends to said frame, said strut and said first and second braces joined together at their other ends.

3,858,745
BOX WALL FASTENERS

Harold S. Cloyd, Erie, Pa., assignor to Nosco Plastics, Inc., Erie, Pa.

Filed Aug. 23, 1973, Ser. No. 390,920
Int. Cl. B65d *7/24*
U.S. Cl. 220—7 **6 Claims**

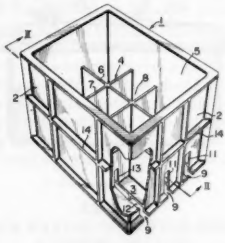


1. A box comprising first and second panels transverse to each other, the first panel having an edge transverse to and abutting a surface of the second panel, said first panel edge having a flexible projection with a cam faced head extending through to the opposite surface of the second panel, said second panel having a slot receiving the projection and a tab with a free end at one side of the slot and with the opposite end of the tab joined to said second panel and the sides of the tab free to deflect relative to said second panel, said head extending through said slot and deflecting said tab, a stop on said opposite surface of said second panel, a shoulder on one side of the head engaging said first end of the tab with the tab in the deflected position, and a shoulder on the opposite side of the head engaging said stop.

3,858,746
CRATE FOR CARRYING BOTTLES

Kashichi Hirota, Tokyo, Japan, assignor to Kyowa Denki Kagaka Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,526
Claims priority, application Japan, Sept. 23, 1971, 46-74487
Int. Cl. B65d *1/24*
U.S. Cl. 220—21 **1 Claim**

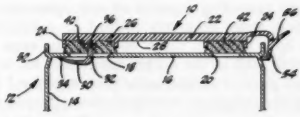


1. In combination a conveyor for transporting crates containing bottles toward a bottle gripping machine, each crate having a bottom wall to be received on the conveyor, peripheral walls upstanding from the bottom wall with spaced first and second walls generally parallel to each other and joined with spaced third and fourth wall extending generally transversely to the first and second walls, first partition walls within the container and extending generally parallel to the first and second walls and between the third and fourth walls, these partition walls intersecting second partition walls extending generally transversely to and between the first and second walls, the partition walls defining section in which individual bottles are received with their bottom resting on the bottom wall and their head portions at the upper open end of the crate, the bottle gripping machine being disposed in spaced relation to the conveyor and over the open ends of the crates passing on the conveyor, this machine adapted to receive the head portions of the bottles and remove the bottles from the crate, the improvement which comprises means defining openings in the lower portions of said first and second peripheral walls, means defining openings in the lower portions of the first partition walls lying respectively between said third and fourth walls and said second partition walls and adjacent pairs of said second partition walls, and still further means defining openings in said bottom wall of the crate that extends between said first and second walls and aligned with the openings on said first and second walls and with the openings on said first partition walls, and ramp means fixedly disposed with respect to the conveyor to lie in longitudinal alignment within the path of movement of the openings in said bottom wall of the crate whereby as a crate passes over said ramp means this means moves through the aligned openings in the crate to contact the bottoms of the bottles in the respective sections and lift these bottles upwardly to a position where the top portions of the bottles project beyond the crate and can be operatively received in the bottle gripping machine.

3,858,747
BUTTON DOWN END CLOSURE

Franklin Eugene Wharton, 1308 Sartori Ave., Torrance, Calif. 90501

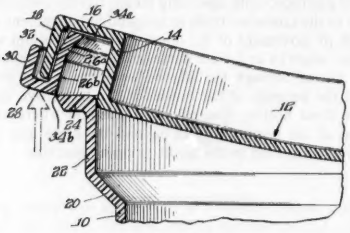
Filed Aug. 13, 1973, Ser. No. 387,701
Int. Cl. B65d *45/00, 43/16*
U.S. Cl. 220—243 **4 Claims**



1. A device for sealing a plurality of openings, a first opening and at least one second opening, in the end wall of a container having at least one end wall and a side wall which devices comprises:

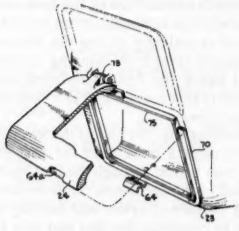
a. a base member adapted to be positioned generally over the openings;
b. a first pad of resilient material attached to one surface of the base member and of a size and adapted to sealingly close a first one of the openings;
c. a second pad of resilient material for each second opening attached to one surface of the base member and of a size and adapted to sealingly close a second opening when the first pad is sealingly closing the first opening;
d. a hook-shaped lever arm swinging out from a first end positioned below the first pad of resilient material and then upwardly to a second end at a position spaced from the base member;
e. means attaching the first end of the lever arm to the base member through a passage in the first pad so that the lever arm may be slid through the first opening and under the end wall of the container, the second end of the lever arm being positioned below and bearing against the end wall so as to compress the first pad into sealing position when the plane of the pad is parallel to the plane of the end wall;
f. means for compressing the second pad into sealing position with respect to a second opening on the end wall of the container to complete the seal.

3,858,748
CONTAINER AND LID CONSTRUCTION FOR INDICATING LID REMOVAL
Leslie Stephan Marco, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Aug. 24, 1973, Ser. No. 391,187
Int. Cl. B65d *17/00, 43/02, 17/20*
U.S. Cl. 220—276 **10 Claims**



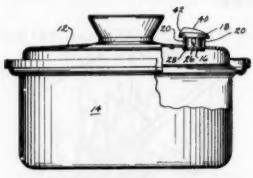
1. A plastic container assembly comprising a body portion having an open end defined by a generally vertical inner wall and an outer depending generally vertical wall joined to the inner wall by a top wall portion, and with the lower portion of the depending outer wall terminating in an upwardly facing trough formation, and a cover closing the open end of the body portion and having radially spaced inner and outer walls interconnected by a top cover flange, said inner walls of said container and said cover being formed to cooperate in a manually releasable interlocking fit, said outer depending wall of the cover projecting into the upwardly facing trough formation, said outer depending wall of the cover and the outer upwardly extending segment of said upwardly facing trough formation being relatively formed to substantially prevent access by a person's finger to the lower edge of said outer depending wall of the cover, and means for weakening said top wall portion of the body portion around the periphery thereof for complete severance therealong upon authorized removal of the cover and trough formation from the body portion and discarding of the trough formation permitting the original cover to be used as a reclosure for the body portion.

3,858,749
DIRT RECEPTACLE
Wilbur Webb Selley, Maitland, and Richard H. Schaffer, Orlando, both of Fla., assignors to Bison Manufacturing Company, Inc., Orlando, Fla.
Division of Ser. No. 738,595, June 20, 1968, Pat. No. 3,608,333. This application Oct. 22, 1970, Ser. No. 83,179
Int. Cl. B65d *43/16*
U.S. Cl. 220—326 **4 Claims**



1. A dirt receptacle for a vacuum cleaner, from which receptacle, dirt and refuse can be rapidly and automatically emptied merely by the application of toe pressure, said receptacle comprising a housing, said housing having means defining an upper portion and a lower portion, said upper portion having inlet means through which dirt can enter, said lower portion having a bottom wall inclined with respect to the vertical and defining an outlet at its lowermost portion, downwardly through which outlet, dirt accumulating on said inclined bottom wall would normally tend to fall under the influence of gravity, a door hingedly supported at its upper edge from said upper portion of said housing and being spring biased upwardly, said door being movable against said spring bias into a generally downwardly disposed position in which it forms a closure for said outlet, said door when in the outlet-closing position, being disposed at an angle to the vertical, but on a different side of the vertical than said inclined bottom wall, thus forming with said inclined bottom wall, an essentially V-shaped configuration in the downwardly-directed apex of which, dirt entering said inlet means can accumulate, and latch means mounted adjacent said outlet and serving to engage the bottom of said hinged door so as to releasably hold said door in the outlet-closing position, said latch means having an extending surface able to be contacted by the toe of the user when actuation of said latch means to bring about release of said door is desired, whereby upon said extending portion of said latch being contacted and said latch actuated to release said door, said door is caused by said spring bias to swing upwardly into an out-of-the-way position, thus allowing the dirt and refuse disposed on said bottom wall and against said door to empty under the influence of gravity.

3,858,750
PRESSURE RELIEF VALVE
Bernard C. Grall, Sheboygan, Wis., assignor to The Vollrath Co., Sheboygan, Wis.
Filed Jan. 7, 1974, Ser. No. 431,277
Int. Cl. B65d *51/16*
U.S. Cl. 220—203 **7 Claims**



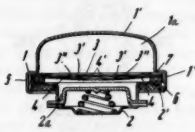
1. In combination with a utensil cover having an opening therein, a pressure relief valve body vertically slideably and rotatably mounted within said opening; means on a lower portion of said valve body engageable with said cover to limit the upward movement of said valve body; a separately-formed valve cap for said valve body, said cap having means engageable with the top of the cover to limit the downward movement of the valve body; cooperating means on said cap and valve body connecting the same in assembled relationship while aligned with the cover opening and with the cover between at least a portion of said valve body and cap, said valve body having a vent opening positioned to be above said cover when said valve body is in a raised position and positioned to be below said cover when said valve body is in its lowered position; and cooperating locking means on said valve body and cover to selectively lock said valve body in its lowered position when the valve body is in one position of rotation and to permit upward movement when the valve body is in another position of rotation.

3,858,751

PRESSURE RELIEVING CLOSURE CAP

Theo Gerdes, Langenfeld, Germany, assignor to Blau KG Fabrik Fuer Kraftfahrzeugteile, Langenfeld, Germany

Filed Nov. 2, 1972, Ser. No. 303,216
Int. Cl. B65d 51/16; F16k 17/00
U.S. Cl. 220—205 7 Claims



1. In a cap for closing a container, a combination comprising first wall means defining an enclosed space; second wall means connected to said first wall means and subdividing said space into a first and a second chamber and including a circular plate formed with an annular elevated portion in the central region thereof facing said second chamber and surrounding a circular depression; means for establishing communication between said first chamber and the exterior of said first wall means; means for establishing communication between said second chamber and the interior of the container; means for establishing communication between said first and second chambers and including at least one aperture in said second wall means radially outwardly of said elevated portion; and means situated in said second chamber and operative for controlling the passage of a gaseous fluid through said aperture and including an elastically yieldable diaphragm having an outer marginal portion fluid-tightly connected with said circular plate and an inner marginal portion bounding a central hole in said diaphragm communicating with said depression, and normally urged by pretension in said diaphragm into contact with said elevated portion, and at least one groove extending in said elevated portion radially outwardly thereof for establishing communication between said depression and said aperture, whereby the gaseous fluid is permitted to pass at least from said second chamber into said first chamber at a first volumetric rate when the pressure in the former exceeds that in the latter, and from said first chamber into said second chamber at a second higher volumetric rate when the pressure in the former exceeds that in the latter to such a degree that said inner marginal portion of said diaphragm is deflected out of contact with said elevated portion of said circular plate.

3,858,752

CONTAINER HAVING IMPROVED RESEALABLE CLOSURE SYSTEM

Richard T. Marvin, Jr., Newport Beach, and Donald O. Rasmussen, Arcadia, both of Calif., assignors to Plastics Research Corporation, Los Angeles, Calif.

Filed Feb. 4, 1974, Ser. No. 439,439
Int. Cl. B65d 53/00, 7/00, 7/24
U.S. Cl. 220—325 16 Claims

1. A plastic container having improved resealable closure system comprising:

a. first and second flexible plastic body portions together defining a chamber and each comprising at least one side encircling the chamber;

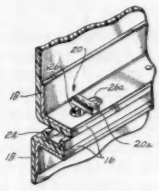
b. a resealable closure system comprising

1. a sealing flange on the at least one side of each body portion, the sealing flanges each encircling the chamber and formed from the corresponding flexible plastic body portion and comprising a side on each, facing the other and a side on each oppositely facing the other,

2. a stiffener for each of the sealing flanges, the stiffeners encircling the chamber and positioned in opposed relation to each other on the oppositely facing sides of the corresponding sealing flanges,

3. a plurality of releasable clamps disposed around the chamber and comprising first and second opposed clamping sides for engaging oppositely facing sides of the stiffeners, the clamps each having a first condition of the clamping side, forcing the stiffeners and sealing flanges together to a sealed condition and a second condition allowing the sealing flanges to separate, and

4. a structure in between the facing sides of the sealing flanges when the first condition exists which exerts



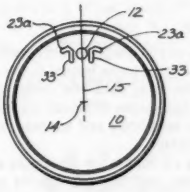
substantially balancing reaction forces between the facing sides from the chamber to the exterior of the container, the structure comprising a resilient gasket encircling the chamber in between the facing sides of the seal flange, the gasket being structured for providing, around the chamber, between the facing sides of the sealing flanges, a gas-tight seal with substantially balancing reaction forces from the chamber to the outer sides of the gasket, the structure thereby substantially eliminating side loading forces on the at least one side due to closure system.

3,858,753

EASY-OPEN CAN END

Donald Roger Brautigam, Sidney, Ohio, assignor to The Stolle Corporation, Sidney, Ohio

Continuation-in-part of Ser. No. 241,535, April 6, 1972, abandoned. This application July 13, 1973, Ser. No. 379,095
Int. Cl. B65d 17/24
U.S. Cl. 220—273 7 Claims

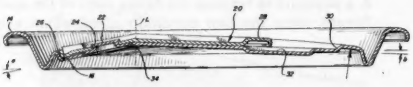


1. In an easy-open metal can end having an integral rivet, a pull tab secured to said panel by means of said rivet, said panel being defined by a score line having a relatively high residual; a first pair of beads disposed equidistantly, one on each side of said rivet, substantially parallel to each other and to a diameter of said can passing through said rivet, and a second pair of beads generally parallel to the periphery of said can end, one of said second pair of beads being associated with each of said first pair of beads in a Vee configuration with the apex of said Vee configuration pointing toward the periphery of the can end.

3,858,754
CONTAINER END WITH PRE-BULGE

Leon M. Patarini, Palos Hills; Frank R. Pileggi, Bridgeview, and Frank Kratochvil, Stickney, all of Ill., assignors to National Can Corporation, Chicago, Ill.

Filed Oct. 29, 1973, Ser. No. 410,616
Int. Cl. B65d *17/20*
U.S. Cl. 220—269 8 Claims

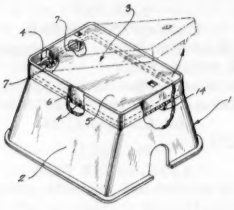


1. In an esay open panel having a weakened line defining an elongated tear strip, said panel having a rim located around the periphery thereof and said rim extending above a main body of said panel, said tear strip having opposite ends with one end located adjacent the periphery of said main body, an elongated tab having opposite ends with a connection between said tab and tear strip adjacent said one end of said tear strip, said main body and tab having a bend extending transversely of said tab and tear strip between said connection and the opposite end of said tab to produce a bulge in said main body extending toward a plane that is defined by the upper end of said rim.

3,858,755
METER BOX WITH COVER HAVING BIASED SNAP-LOCK

Chester J. Tellen, Sheboygan, Wis., assignor to Ametek, Inc., Sheboygan, Wis.

Filed Apr. 2, 1973, Ser. No. 346,788
Int. Cl. H02g *9/02*; B65d *45/08*, *45/20*
U.S. Cl. 220—284 6 Claims



1. A meter box comprising, in combination:

a. a box body adapted to be buried in the ground to protect a meter or the like, said box body including inwardly extending flange means disposed on the interior thereof,

b. a cover for said body and adapted to be positioned at the ground surface,

c. strengthening rib means on the under side of said cover,

d. hinge means securing one side of said cover to said body for opening and closing the cover,

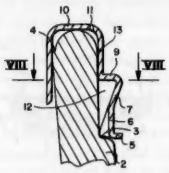
e. locking means on the under side of said cover remote from said hinge means for cooperating with said box body to releasably lock said cover in lowered position, said locking means including a latch mounted for pivotal movement beneath said cover and adapted to ride over said flange means when said cover is lowered onto said box body,

f. and spring means connected between said locking means and said cover strengthening means for biasing said locking means toward a locked position, said spring means comprising a spring member connected to said latch and extending into flexing engaging relationship with said rib means.

3,858,756
VENTED CONTAINER AND LID

Edward W. Fulton, Exton, Pa., assignor to The Alan I W Frank Corporation, Pittsburgh, Pa.

Filed Dec. 12, 1972, Ser. No. 314,292
Int. Cl. B65d *51/16*, *43/10*
U.S. Cl. 220—306 6 Claims

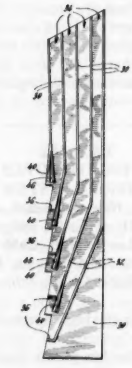


1. A vented polystyrene container comprising an open-topped container and a separate lid applied to the open top of the container, the lid being shaped to lie in contact with the container wall,throughout a lower circumferential zone and an upper circumferential zone providing a vapor receiving annulus between said zones, except that at least one localized portion of the lower circumferential zone the lid is spaced from the container wall to permit vapor to pass upwardly through the lower circumferential zone into the vapor receiving annulus, vent means being provided for venting to the outside vapor from the vapor receiving annulus, the separate lid lying in face-to-face contact with the container wall throughout the upper circumferential zone but being distendable to permit vapor from the vapor receiving annulus to pass upwardly through the upper circumferential zone.

3,858,757
CIGARETTE DISPLAY DISPENSER

Richard H. Langdon, Jr., Tarrytown, N.Y., assignor to Mechtronics Corporation, Stamford, Conn.

Filed Dec. 20, 1972, Ser. No. 316,868
Int. Cl. A47f *1/10*
U.S. Cl. 221—92 6 Claims



1. A cigarette package display dispenser, formed from modular partitions, in which a plurality of vertical stacks of cigarette packages of varying dimensions are to be gravity fed in an upright fashion through chutes defined by the modular partitions to bottom stops which support the lowermost cigarette packages in a display position in which substantially the entire face of the cigarette package is visible and in which individual cigarette packages are to be dispensed from the

display position by manually removing them forwardly from the front of the display dispenser out of the chutes and out of engagement with the bottom stops, the display dispenser being characterized by

fixed bottom stops; and

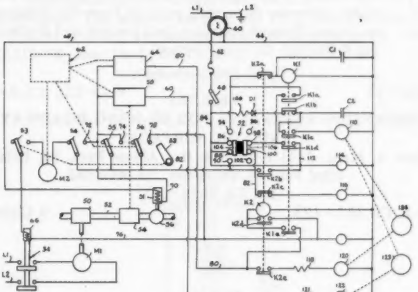
elongate flat leaf spring elements cantilevered from their upper ends, the elongate flat leaf spring elements being carried by the modular partitions and extending along at the front sides of each chute and terminating above the bottom stops and below the tops of cigarette packages in display position for slidingly engaging the front edge surfaces of the cigarette packages as they descend into the display position and for urging the cigarette packages rearwardly as they descend to maintain them confined in the chutes and to bring them into engagement with the fixed bottom stops, said elongate leaf spring elements being arranged to hold the packages within the chutes and to flex forwardly through a small angle as a cigarette package is dispensed by removing it forwardly from the front of the display dispenser out of engagement with a fixed bottom stop, thereby providing reliable cigarette package feeding, and enabling packages of different lengths and widths to be accommodated without adjustment and to be conveniently dispensed.

3,858,758

POST-PAY FUEL DISPENSING SYSTEMS

Larry A. May, Jonesboro, Tenn., assignor to Keene Corporation, New York, N.Y.

Filed Sept. 4, 1973, Ser. No. 393,991
Int. Cl. G06f *7/38*
U.S. Cl. 222—33 **13 Claims**



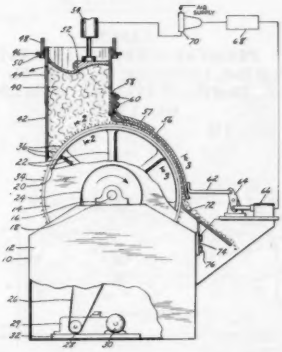
1. In a post-pay fuel dispensing system; and electrically operated dispenser unit and a control station remote therefrom, a momentary manual switch in said control station operable to prepare an energizing circuit for said unit thereby to enable said unit to dispense fuel, an on-off switch on the unit connected into said energizing circuit and operable into "on" position to complete said energizing circuit prior to fuel dispensing and into "off" position to interrupt said energizing circuit and disable said unit at the end of fuel dispensing, a money pulser in said unit operable to develop an electric pulse for each unit of fuel dispensed of a predetermined value, and interlock means in said control station connected in said energizing circuit and actuated by the first pulse from said money pulser and operable when so actuated to make said manual switch ineffective in respect of enabling said energizing circuit prior to return of said on-off switch to "off" position.

3,858,759

APPARATUS FOR VOLUMERIC FEEDING OF FIBROUS MATERIAL

Lewis W. Lubenow, deceased, late of Bloomfield, N.J. (by Elizabeth J. Lubenow, executrix), assignor to Robert W. Lubenow, Bloomfield, N.J.

Filed Dec. 17, 1971, Ser. No. 209,181
Int. Cl. D01g *23/06*
U.S. Cl. 222—55 **9 Claims**



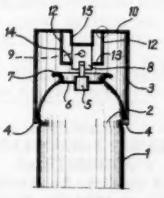
1. Apparatus for the volumetric feeding of fibrous materials comprising at least one hopper for said fibrous material, said hopper having an open bottom; means for applying a compressive force to said fibrous material in said hopper; conveying means for receiving said fibrous material from said hopper, said conveying means including a plurality of prongs for entraining said fibrous material; means for driving said conveying means past said open hopper bottom whereby said fibrous material is forced by said compressive force onto said prongs; confining means for forming and holding a layer of said entrained material on said prongs after advancing past said open hopper bottom, said confining means being a plate pivoted at one end and having a surface corresponding to the shape of said conveying means; and means for removing said entrained fibrous material from said prongs.

3,858,760

DISPLAY CAP FOR PRESSURIZED CONTAINER

Antonin Goncalves, Groslay, and Michel Desruet, Paris, both of France, assignors to L'Oreal, Paris, France

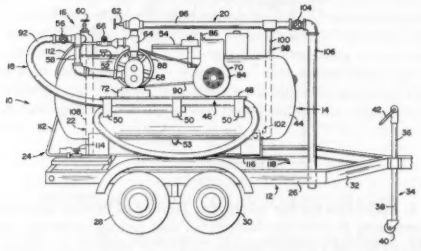
Filed May 18, 1973, Ser. No. 361,413
Claims priority, application France, May 31, 1972, 72.19424
Int. Cl. B65d *47/10*
U.S. Cl. 222—153 **9 Claims**



1. Display cap for mounting on a pressurized container equipped with a dispensing valve at its upper end, which valve has an outlet actuated by a push-button, said cap comprising means at its lower end for attaching it to said pressurized container and a transverse channel in its upper end, the me-

dian plane of which channel passes substantially through the axis of the cap, said channel having a width substantially equal to the width of a human finger and an orifice in its bottom for admitting the upper part of the push-button, said cap further comprising a sealing strip across the top of said channel, said sealing strip having a U-shaped section, with the two arms of the U substantially parallel to the width of the channel and attached to the sides of said channel at their upper ends by a weakened zone, the bottom of the U being adjacent the top of the push-button.

3,858,761
PRESSURE SPRAYING APPARATUS
James R. O'Dell, 12159 Craft Dr., Largo, Fla. 33540
Filed Oct. 3, 1973, Ser. No. 403,209
Int. Cl. B05b *9/00*
U.S. Cl. 222—178 **11 Claims**



1. A pressure spraying apparatus for spraying fluid comprising a support frame, a reservoir means mounted on said support frame, fluid handling means including fluid inlet control means, pump assembly and fluid outlet control means, said fluid inlet control means having a transfer and supply mode and said fluid outlet control means having a transfer and supply mode, fluid transfer means and fluid supply means, said fluid transfer means disposed in fluid communication with the interior of said reservoir means when said fluid inlet control means is in said transfer mode and said fluid outlet control means is in said transfer mode through said pump assembly, said fluid supply means disposed in fluid communication with the interior of said reservoir means when said fluid inlet control means is in said supply mode and said fluid outlet control means is in said supply mode, said fluid transfer means including a fluid inlet transfer means and a fluid outlet transfer means, said fluid inlet transfer means in fluid communication with the inlet of said pump assembly through said fluid inlet control means, and said fluid outlet transfer means coupled between said fluid outlet control means and the interior of said reservoir means; said fluid supply means including a fluid inlet supply means and a fluid outlet supply means, said fluid inlet supply means coupled between said fluid inlet control means and the interior of said reservoir means, said fluid outlet supply means coupled to the outlet of said pump assembly and in fluid communication with said fluid inlet supply means through said fluid inlet control means.

3,858,762
ACTUATOR ASSEMBLY FOR AN ENCASED DISPENSER AND METHOD
Philip Meshberg, 85 Old Oaks Rd., Fairfield, Conn. 06604
Filed Nov. 9, 1972, Ser. No. 304,921
Int. Cl. B05b *15/00*
U.S. Cl. 222—180 **12 Claims**

1. In combination with an actuator assembly for a valved dispenser cartridge having a valve stem portion protruding therefrom including

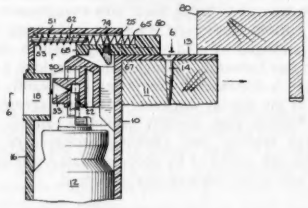
a housing adapted to be fixedly secured to a support and to receive the dispenser cartridge,

a spray button mounted for operative connection with the protruding valve stem portion of the dispenser cartridge, and

actuator means mounted on the housing for cooperation with the button,

the improvement comprising:

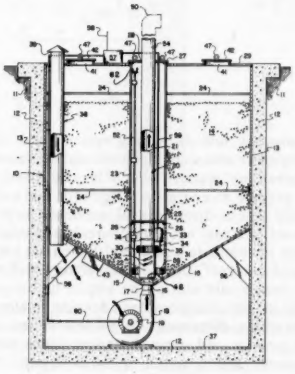
cooperable means comprising elongated ears slidably disposed within grooved tracks, said means being mounted between the spray button and the housing for snugly supporting and slidably holding the spray button



for non-tilt reciprocation within the housing, and shoulder means fixedly mounted to the housing to limit inward movement of the spray button in the said cooperable means and to retain the spray button as a captive component of the housing, the spray button being shaped for cammed cooperation with the actuator means

whereby relative motion between the housing and the actuator means is converted into solely axial actuating movement of the button relative to the dispenser cartridge valve for dispensing product from the dispenser cartridge, through the valve stem portion and discharging it through the spray button.

3,858,763
DISPENSING APPARATUS FOR DE-ICING ROADWAYS AND LIKE SURFACES
John A. Mack, 2815 Franklynn Dr., Allison Park, Pa. 15101
Filed Feb. 14, 1974, Ser. No. 442,382
Int. Cl. B65g *53/22*
U.S. Cl. 222—193 **9 Claims**



1. An apparatus for dispensing particulate material comprising:

A. a housing for storing the particulate material having a downwardly extending convergently shaped floor, said floor having an orifice formed therethrough at the point of convergence;

B. a dispensing tube vertically mounted within said housing having an axial bore therethrough and having an inlet end and a discharge end, said inlet end positioned adjacent the orifice of the housing floor and axially aligned therewith;

C. valve means for selectively opening and closing an area between the inlet end of the dispensing tube and housing floor adjacent the orifice whereby the flow of particulate material between the inlet and orifice may be selectively regulated from an open position to a closed position;

D. means for supplying a high velocity air stream upwardly through the orifice of the housing floor and the bore of the dispensing tube; and

E. control means for sequentially energizing and de-energizing the air supply means and valve means, whereby, upon activation, said control means first energizes the air supply means and then sequentially energizes the valve means to an open position to permit the particulate material to flow between the inlet end of the dispensing tube and orifice of the housing floor whereupon the particulate material is conveyed upwardly through the dispensing tube by the high velocity air stream and dispensed at the discharge end of the tube, and upon de-activation, said control means sequentially closes said valve means to prevent the flow of particulate material and de-energizes said air supply means.

3,858,764

PRESSURIZED DISPENSERS

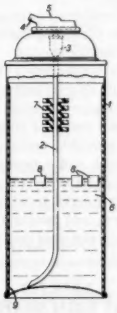
Hugh R. Watson, Wargrave, England, assignor to Wilkinson Sword Limited, Buckinghamshire, England

Continuation-in-part of Ser. No. 196,518, Nov. 8, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,790

Claims priority, application Great Britain, May 12, 1972, 22319/72; Jan. 13, 1973, 1904/73

Int. Cl. B65d *83/14*

U.S. Cl. 222—399 **23 Claims**



1. A pressurized dispenser comprising

a container provided with a valve-controlled outlet and containing a concentrate, and

a reservoir holding propellant, positioned within the container, the reservoir comprising an organic substance with which the propellant forms a solution and over which the vapor pressure of the dissolved propellant is less than that of the pure propellant,

the organic substance being capable of forming a solution with at least 15 percent of its own weight of propellant at room temperature, and

the reservoir being capable of releasing propellant within the container as the contents of the container are dispensed.

3,858,765

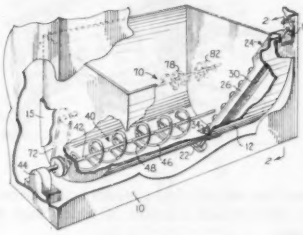
DISPENSING APPARATUS

Jerry L. Landers, Sellersburg, Ind., assignor to Servend Distributors, Inc., Sellersburg, Ind.

Filed May 18, 1973, Ser. No. 361,751

Int. Cl. G01f *11/24*

U.S. Cl. 222—413 **5 Claims**



1. An ice cube dispensing apparatus comprising:

a storage bin having a pair of side walls and arcuately shaped bottom surface of continuous unbroken curvature including curved front and back portions each generally quarter-circle shaped, said front bottom portion being curved to a lesser degree than said back bottom portion;

a first auger in said bin for dispensing ice cubes therefrom;

a rectangular channel angularly disposed in said bin and encompassing said first auger to support the ice cubes being dispensed thereby, said rectangular channel being opened over a portion of its length to expose said auger and including a cutout in a side wall thereof proximate the bottom surface of said bin;

a second auger in said bin positioned for rotational movement and having a feed end and a delivery end positioned proximate said first auger, said second auger including a shaft and a helical wire spaced from said shaft by rib means and being positioned along said bottom surface and offset from the center of said bin toward said back portion along the mutual intersection of said front and back bottom portions; said cutout being disposed proximate said delivery end of said second auger; and

said first auger being disposed at a right angle to said second auger and said second auger being adapted to move ice cubes through said cutout to said first auger and ice cubes that do not move through said cutout into a circulation path wherein such cubes move up the curved front bottom portion of said bin and thereafter move downwardly to the feed end of said second auger to thereby effect the breaking up of fused ice cubes.

3,858,766

DEVICE FOR DISCHARGE NOZZLES ON CANS

Wolfram Schiemann, Eugen Nagele Strasse 17, 7140 Ludwigsburg, Germany

Division of Ser. No. 210,063, Dec. 20, 1971,. This application Apr. 1, 1974, Ser. No. 457,055

Int. Cl. B66d *3/00*

U.S. Cl. 222—479 **13 Claims**

1. A blow-molded thermoplastic can having a blow-molded nozzle integral therewith comprising

an outer wall on said nozzle,

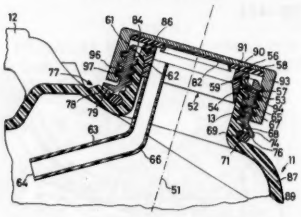
insert ring means secured within said nozzle in the vicinity of its outer end for hindering the inward movement of said nozzle,

cover means for closing off said nozzle,

sleeve means of a substantially harder material than said nozzle and said can,

connecting means provided between the outer wall of the nozzle and the inner wall of said sleeve means for rigidly connecting the sleeve means about said nozzle for hindering the outward movement of said nozzle,

means for hindering rotation of said sleeve means on said nozzle in either direction,



the lower face of said sleeve means being spaced from the outer face of said can out of which said nozzle wall emerges,

downwardly projecting and outwardly tapering skirt means on said sleeve means spaced from contact with the outer face of said can out of which said nozzle wall emerges,

O-shaped ring means between said skirt means and the surface of said can compressible in the direction of the geometric longitudinal axis of the nozzle,

said cover means being screwed upon said sleeve means.

3,858,767

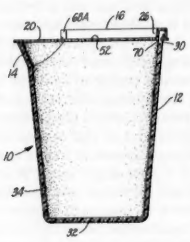
CUP WITH SELF-SEALING SPOUT

Harlan F. Borin, P.O. Box 607, Cedar Glen, Calif.

Filed Dec. 10, 1973, Ser. No. 423,407

Int. Cl. B65d *25/42*

U.S. Cl. 222—494 **2 Claims**



1. A liquid storing and dispensing container comprising:

a cup including

a vertically extending sidewall having an upper edge defining an open top for said cup,

a spout extending outwardly from said sidewall below said top and including an upwardly facing open end having an upper edge in a plane lower than said upper edge of said cup, and said upper edge of said cup terminating at vertically extending shoulders in said sidewall adjacent and contiguous with opposite ends of said upper edge of said spout;

a lid of plastic material for covering said open top of said cup substantially in a plane of said upper edge of said spout and including an open bottom channel extending upwardly from a top of said lid for receiving and tightly sealing against an upper portion of said cup between said shoulders, said open bottom channel including opposing sidewalls for engaging in fluid tight seal inner and outer sidewall portions of said cup adjacent said upper edge of said cup and ends for engaging said shoulders in a fluid tight seal; and

a flat flexible and resilient flap of plastic material continuous and substantially coplaner with and cantilevered outwardly from said lid along a substantially straight line between ends of said channel for normally resting on and sealing against said upper edge of said spout and for bearing tightly on said upper edge of said spout at junctions with said channel ends to maintain a fluid tight seal with said cup at said junctions and for rising from said spout at all but said junctions as liquid in said cup presses thereagainst with a tipping of said cup to permit a dispensing of liquid through said spout to automatically return to sealing engagement with said spout as said cup is returned to an upright position.

3,858,768

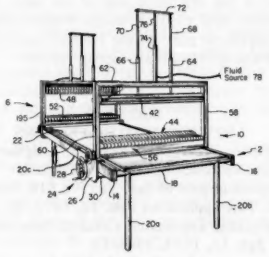
APPARATUS FOR FINISHING DRAPERIES

John H. Hales, P.O. Box 1098, and Myron R. McAllister, P.O. Box 1098, both of Aurora, Utah

Filed Feb. 28, 1974, Ser. No. 446,729

Int. Cl. D06j *1/00*; **A41h** *43/00*

U.S. Cl. 223—32 **19 Claims**



1. Apparatus for finishing draperies comprising

a frame,

a first pleater assembly mounted on said frame for securing one end of a drape,

a second pleater assembly mounted on said frame and movable with respect to the first pleater assembly for securing the other end of the drape,

each pleater assembly including a first array of finger elements longitudinally spaced and extending upwardly and toward the other pleater assembly for carrying one end of the drape, a second array of finger elements longitudinally spaced and movable vertically between a position above said first array and a position in which the finger elements of the second array extend between the finger elements of the first array to secure the one end of the drape therebetween, and means for moving said second array vertically between said positions.

3,858,769

ROLLED HAT BRIM SHAPING DEVICE

Elmer O. Billingslea, Jr., Route 1, Salina, Okla. 74365

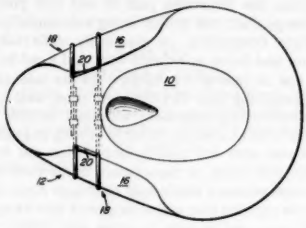
Filed June 20, 1974, Ser. No. 481,446

Int. Cl. D06c *15/00*

U.S. Cl. 223—84 **4 Claims**

1. A rolled brim retaining means for a hat including a pair of generally U-shaped wire-like members, the closed portion or bottom of each U-shaped member being bent upon a radius that will approximate the radius of desired curvature of a rolled brim portion of a hat, the paired open-ends of each U-shaped member being loosely interconnected by a slip-lock arrangement providing means to adjust the distance between the two curved portions of the joined U-shaped members, said slip-lock connections allowing movement of the parallel,

open-ended portions of the U-shaped members, but being sufficiently close-fitting to frictionally prevent undesired movement or separation of said parallel portions without the



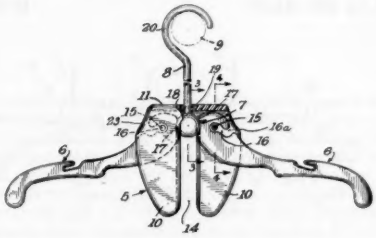
user exerting force to accomplish such a movement or separation, so that once the retaining means is placed in the desired position on the rolled brim of a hat, it will retain the rolled brim in such position until further wearing of the hat.

3,858,770

FOLDABLE GARMENT HANGER

Ralph P. Murray, 2591 Armacost Ave., Los Angeles, Calif. 90064

Filed Feb. 25, 1974, Ser. No. 445,819
Int. Cl. A47j *51/10*
U.S. Cl. 223—94 **3 Claims**



1. A foldable garment hanger comprising:

a hood having spaced sides connected by a closed upper portion of the hood, a vertical guideway being formed between said sides,

a pair of transversely spaced pivot pins, one on each side of the guideway and integrally molded to extend between the hood sides,

a hanger hook connected by its lower end to the globular member and slidably extending through an opening in said closed upper portion of the hood,

a globular member slidably and rotationally mounted in said guideway and movable between a position between said pivot pins and a position adjacent the lower end of the hood, said globular member being connected to the lower end of said hanger hook, and

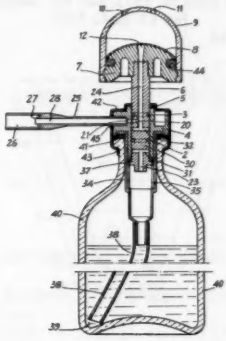
a pair of similar garment-supporting arms, each provided at one end with a bayonet slot for separable and pivotal engagement with said pins, and with a concave edge that rotationally interfits with the globular surface of the globular member to lock said arms in spread garment-supporting position when a hanger hook affixed to the globular member is in hanging engagement from above.

3,858,771

LIQUID DELIVERY VALVE CONSTRUCTION

Pierre Bret, Meudon-la-Foret, and Catherine Suck, Montrouge, both of France, assignors to Societe Lablabo, Montrouge (Hauts de Seine), France

Continuation of Ser. No. 852,698, Aug. 25, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 246,678
Claims priority, application France, Apr. 4, 1969, 69.10448
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.2 **9 Claims**



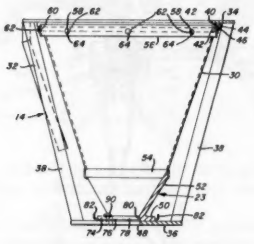
1. An automatic closing slide valve for containers carrying a liquid under pressure comprising: a valve body for sealing an opening in the container, and having a transverse liquid discharge channel; an elongated distributor slidably mounted in said valve body for sliding movement between a lower position in which liquid in said container may be discharged or said container may be filled through said slide valve and an upper position in which said slide valve prevents escape of said liquid from said container, said distributor being operable to be urged outwardly of the valve body to said upper position by the internal pressure of the container and to be manually depressed against said internal pressure by downward pressure on its upper end, said distributor having transverse channel means and an axial channel extending through said distributor from the upper end of the distributor to and into said transverse channel means; a longitudinally extending slideway formed in the valve body and terminating in upper and lower shoulders, and a lateral projection near the lower end of the distributor extending into said slideway, the lateral projection engaging said upper and lower shoulders when the distributor is in the upper and lower positions, respectively, thereby to limit the distributor from sliding beyond said upper and lower positions, said slideway and said lateral projection cooperatively preventing angular rotation of the distributor as it slides between said upper and lower positions; conduit means for establishing communication between said container and said transverse channel means when the distributor is in the lower position; sealing means between the distributor and the valve body and below said transverse channel means for disconnectng said transverse channel means from said conduit means when the distributor is in the upper position; said transverse channel means being effective to communicate with said liquid discharge channel when the distributor is in the upper position and to be disconnected therefrom when the distributor is in the lower position; a support member fitted over the upper end of the distributor via an opening therein sized to snugly fit over said upper end, dose-measuring means on said support member for storing a predetermined amount of liquid flowing into said measuring means through said axial channel when the distributor is in the lower position and dispensing means carried by said support member for dispensing through said axial channel, said transverse channel means and said

liquid discharge channel said predetermined amount of liquid stored in said measuring means when the distributor is in the upper position, said support member being replaceably detached from said upper end being operable to carry said measuring means and said dispensing means when so detached.

3,858,772
HOPPER ASSEMBLY

Lawrence Archibald Myers, Jr., Franklin, Pa., assignor to Conair, Inc., Franklin, Pa.

Filed June 26, 1972, Ser. No. 266,275
Int. Cl. E04b *7/00*
U.S. Cl. 222—460 **8 Claims**

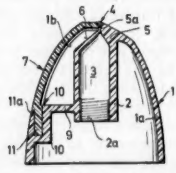


1. A method of forming an elongated pliant hopper member within a vertical supporting device having vertically spaced transversely extending hopper end supporting means with each of said supporting means being stationary with respect to each other comprising the steps of: releasably securing said hopper member within said supporting device intermediate said supporting means in a first position in a manner such that one end thereof is supported by and is in direct communication with one of said supporting means and the other end of said hopper member is supported by the other of said supporting means; subsequent to said securing applying a tensioning force to said hopper member and moving said other end of said hopper member toward said other of said supporting means to releasably retain said hopper member in a second position; and the sidewall of said hopper member is respectively slack in said first position and taut in said second position.

3,858,773
AUTOMATICALLY OPENING AND CLOSING DEVICE FOR A CONTAINER WITH LIQUID, OR FOAM-FORMING FILLING

Franco Del Bon, 9 Henzmannstrasse, 4800 Zofingen, Switzerland

Filed Jan. 10, 1974, Ser. No. 432,240
Claims priority, application Switzerland, Sept. 17, 1973, 13418/73; Nov. 19, 1973, 16248/73
Int. Cl. B65d *5/72*
U.S. Cl. 222—494 **15 Claims**

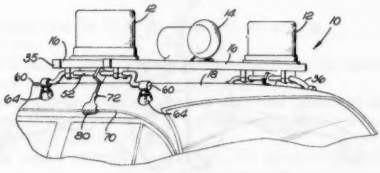


1. An automatically opening and closing closure device adapted for use with a container having a liquid, pasty or foamy filling, and comprising a head body, a discharge duct in said head body and having an orifice in the outside of the latter, said head body having an opening at a side therefore away from said discharge orifice and being destined for being joined to said container, said head body comprising a continuous integral wall portion about said discharge duct and orifice, said wall portion comprising an elastically flexible zone extending from part of the circumference of said orifice toward said opening, the remaining part of said wall portion about said discharge duct and orifice being substantially rigid; and beak means comprising an elastically deflectable spring-loaded arm and being associated with said head body so that the free end of said arm is located on the side of said wall portion containing said flexible wall zone, said spring arm being biassed into engagement with said flexible wall zone near said orifice to hold the latter in sealing engagement with said rigid wall part and closing said orifice, the bias of said deflectable arm being so dimenioned as to yield to a determined excess pressure inside said discharge duct, said elastic wall zone to urge the free end of said beak arm away from said rigid wall part, and thereby to open said orifice while said excess pressure prevails in the duct, said beak means further comprising a rigid portion and said head body having a recess for housing said beak arm therein as well as a cavity open at the end of said recess away from said orifice and adapted to hold rigid beak portion firmly therein, while said elastically deflectable beak arm is biassed toward said elastically flexible wall zone when placed with its free arm end against the last-mentioned zone at said orifice, such biassing being provided by a spring force inherently present in said deflectable beak arm due to tensioning of the latter.

3,858,774
VEHICLE ROOF CARRIER

Odd Friis, Newport Beach, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 30, 1973, Ser. No. 346,290
Int. Cl. B60n *11/00*
U.S. Cl. 224—42.1 F **10 Claims**



1. A carrier for a vehicle roof having drain gutters along the sides thereof comprising:

at least one mounting bar adapted to extend transversely of said vehicle roof,

clamping means mounted on opposite ends of said bar, said clamping means being slidably adjustable longitudinally of said bar;

each said clamping means forming an opening extending transversely of said bar;

a tubular leg having a generally straight central portion and axially offset, coaxial end portions;

said tubular leg rotatably mounted about the longitudinal axis of its central portion in said opening of each said clamping means, said tubular end portions extending to opposite sides of said clamping means below said bar, said tubular end portions being spaced from said clamping means;

a separate leg support at each end of said legs adapted to engage said vehicle roof at positions spaced from said drain gutters and to support the tubular leg, said leg supports for each leg having cylindrical bearing surfaces coaxial with respect to each other defining an axis of rotation and perpendicularly extending portions for engaging the vehicle roof, said tubular end portions of each

said leg being mounted on said bearing surfaces of its corresponding leg supports for rotation about said axis; and

second clamping means on each said tubular leg between said end portions thereof for connecting said leg to a drain gutter.

3,858,775

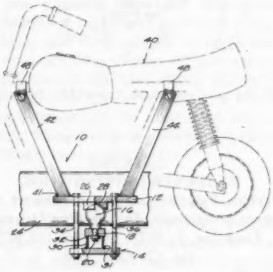
MINI BIKE CARRIER

Lawrence J. Haas, 124 N. 16th Ave., West Bend, Wis.

Continuation-in-part of Ser. No. 144,980, July 8, 1971, abandoned. This application Nov. 12, 1973, Ser. No. 415,290

Int. Cl. B60n *9/10*

U.S. Cl. 224—42.03 B **1 Claim**



1. In combination a trailer hitch having a tow bar and a ball said ball having a threaded shank projecting through an aperture in said tow bar, a nut on said shank, and a carrier for a two-wheeled vehicle or the like comprising upper and lower spaced clamping plates, said upper plate having a socket with a curvature complementary to the curvature of said ball hitch for receiving said ball hitch, said lower plate including an upstanding sleeve engagable with the undersurface of said tow bar, bolts extending through said upper and lower plates, for clamping said upper plate in contact with said ball hitch and said upstanding sleeve in said lower plate in contact with said tow bar, said sleeve receiving said shank and nut and support arms fastened to said upper plate and extending upwardly for supporting said vehicle.

3,858,776

METHOD AND APPARATUS FOR RECOVERING INSULATION AND CONDUCTOR FROM SCRAP INSULATED WIRE

Michael Blackstone, Atlanta; Bryant K. Maddox, Carrollton; Bobby A. Rowland, Carrollton, and Stanley L. Tate, Carrollton, all of Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Feb. 22, 1973, Ser. No. 334,972

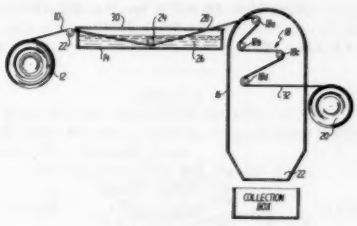
Int. Cl. B26f *3/00*

U.S. Cl. 225—2 **8 Claims**

1. The process for continuously removing the insulating covering from the entire surface of insulated wire without damaging the wire comprising the steps:

providing wire covered with a fragmentable insulation;

bending said insulated wire continuously across the length thereof by passing the wire over roller means to an extent sufficient to fracture said insulation without damaging the wire to be recovered; and



recovering said bare wire in an undamaged condition.

3,858,777

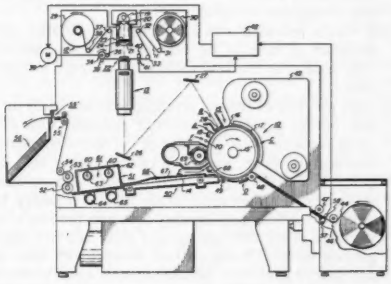
PRINTING APPARATUS INCLUDING REGISTRATION CONTROL

Victor Rodek, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 254,131, May 17, 1972, Pat. No. 3,768,904. This application May 16, 1973, Ser. No. 360,859

Int. Cl. B65h *23/18*

U.S. Cl. 226—30 **6 Claims**



1. A system for synchronizing the speed of a first web moving continuously at a constant velocity and bearing preprinted information thereon and a second web moving continuously at a controllable velocity and bearing prerecorded information thereon comprising:

first driving means coupled to said first web to drive said web at said constant velocity,

second driving means coupled to said second web to drive said web at said controllable velocity,

means to sense the velocity of said first web and to generate a signal indicative thereof,

means to sense the velocity of said second web and to generate a signal indicative thereof,

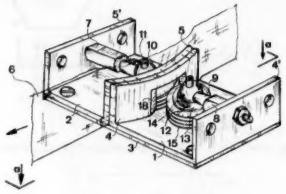
means for receiving said signals and being responsive thereto for providing an output to adjust the operation of said second drive means so the velocity of said second web is in a predetermined relationship with the velocity of said first web, and

means for delaying the transmission of, for a predetermined period of time, a selected one of said signals from said respective velocity sensing means to said signal receiving means.

3,858,778
DEVICE FOR LOCATING THE EDGES OF A FLEXIBLE FILM

Robert Regipa, Toulouse, France, assignor to Centre National D'Etudes Spatiales, Paris, France

Filed Mar. 18, 1974, Ser. No. 452,193
Int. Cl. B65h *23/32*
U.S. Cl. 226—180 **4 Claims**



1. A device for locating at least one edge of a flexible film of specific thickness within a range of thicknesses under consideration, said film being required to travel continuously, under the action of drive means, for the purpose of being subjected to a specific operation, said device comprising, for each edge of the film to be located:

two adjacent guide elements consisting of two guiding surfaces facing each other, between which the edge of said film is required to travel;

stop means provided with a locating area, parallel with the direction of travel of the film, on which the edge of said film, guided by the said surfaces, is adapted to bear and slide;

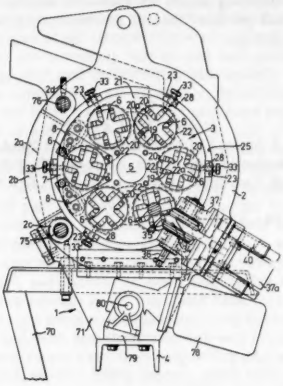
at least one pair of rollers, arranged symmetrically on each side of the guide elements and provided with flexible skirts between which the edge of the film is adapted to be resiliently gripped, the plane of rotation of said rollers being at a slight angle to said locating area, so that the skirts of said rollers apply to the film, as it passes, forces directed towards said locating area and tending to apply the edge of the film against said area, said two opposing guiding surfaces being curved, parallel with each other, and spaced apart by a distance at least equal to the maximal thickness of film in the range under consideration, the lines of maximal curvature of these surfaces being located in planes parallel with the locating area.

3,858,779
BAR FEEDER FOR FEEDING BAR STOCK MATERIAL TO A MACHINE TOOL

Ewart Harold Doe, Houghton, nr. Stockbridge, England, assignor to Twyford Moors Ltd., Hampshire, England

Filed Mar. 26, 1973, Ser. No. 344,651
Int. Cl. B65h *5/00*
U.S. Cl. 226—189 **12 Claims**

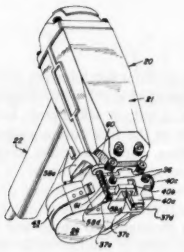
1. A bar feeder, for feeding bar stock material to a machine tool, comprising a reel; means for indexing said reel around about a longitudinal axis; a plurality of guideways extending longitudinally through said reel; each of said guideways being formed by a plurality of longitudinally extending members respectively displaceable radially outwardly and inwardly from the longitudinal axis of each guideway to adjust the diameter of the guideway; clamping means at each end of each of said longitudinally extending members whereby said longitudinally extending members can be clamped in desired positions and can be unclamped and moved in directions radially of the guideway to be clamped in further desired positions; and drive means movable sequentially to engage bars extending through the guideways to move the bars longitudinally therein.



3,858,780
FASTENER-DRIVING TOOL

Garry R. Perkins, Palatine, and Joseph Schwert, Cary, both of Ill., assignors to Spotnails, Inc., Rolling Meadows, Ill.

Filed Jan. 8, 1973, Ser. No. 321,972
Int. Cl. B25c *1/04*
U.S. Cl. 227—8 **1 Claim**



1. A pneumatically powered low profile fastener-driving tool comprising a housing provided with a cylinder adapted to have the upper end thereof normally closed by an adjustably mounted poppet valve; manually operable trigger means mounted on said housing for controlling the movement of the poppet valve to an open position relative to the upper end of said cylinder; a drive piston mounted for reciprocatory movement within said cylinder and carrying an elongated depending driver blade, the latter having a portion thereof protruding from the underside of said housing, said piston normally assuming a static position adjacent the upper end of said cylinder when said trigger means is at rest and said poppet valve is in a closed position, said piston moving through a drive stroke only when said trigger means is manually manipulated causing the poppet valve to assume an open position; a nose section mounted on and protruding from the underside of said housing, said nose section including a sectional guide means encompassing the driver blade protruding portion; safety means adjustably mounted on said nose section for movement between extended and retracted positions, said safety means, when in a retracted position, causing said trigger means to be

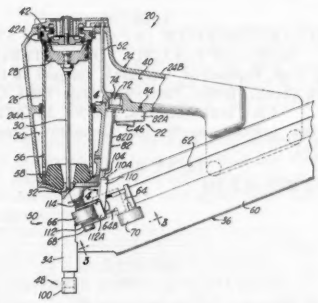
responsive to manual manipulation and, when in an extended position, causing said trigger means to be non-responsive to manual manipulation; a removably mounted magazine of collated fasteners; and a fastener-feed assembly mounted on said nose section and on which said magazine is removably mounted, said assembly including a cylindrical member, a pneumatically responsive feed piston mounted for reciprocatory movement within said cylindrical member to effect intermittent feeding of a collated fastener from said magazine into alignment with said driver blade only when the latter has moved a predetermined amount in one direction, said feed piston being biased to move in a direction towards said guide means, and conduit means having a first portion in communication with the cylinder within said housing and a second portion in a free-floating pneumatically sealed relation with the cylindrical member of said feed assembly; said driver blade being provided with a substantially planar elongated first surface in slidable engagement with a section of said sectional guide means, elongated narrow second surfaces of substantially like configuration disposed along opposite peripheral sides of said first surface and extending angularly in substantially one direction from said first surface, and an enlongated reinforcing rib formed on a third surface opposite said first surface, said third surface having portions thereof disposed on opposite sides of said rib converging from said second surfaces towards the base of said rib, the thickness of said blade in vicinity of said reinforcing rib and said second surfaces being substantially the same, said second and third surfaces of said blade being in slidable engagement with a section of said sectional guide means.

3,858,781

SAFETY MECHANISM FOR FASTENER DRIVING TOOL

Allen R. Obergfell, Park Ridge, and Bernard W. Geist, Melrose Park, both of Ill., assignors to Fastener Corporation, Franklin Park, Ill.

Filed May 14, 1973, Ser. No. 360,083
Int. Cl. B25c *5/06*
U.S. Cl. 227—8 **11 Claims**



1. In combination with a tool for driving fasteners into a workpiece of the type including a fluid powered drive means including a nosepiece structure through which fasteners are driven into a workpiece, a driver movable in the nosepiece, and a fluid motor for operating the driver; a magazine assembly for feeding fasteners into the nosepiece structure; and a fluid valve assembly for controlling the operation of the fluid motor; a safety assembly comprising

a workpiece engaging means, a detecting means for determining the presence of a certain minimum quantity of fasteners in the magazine assembly,

first and second control means each movable between effective and ineffective positions and each disposed in an effective position by one of the workpiece engaging means and detecting means,

third control means comprising a trigger means and movable between effective and ineffective positions,

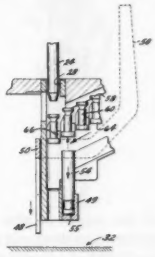
and a control member for controlling operation of the fluid valve assembly and adapted to be engaged by the three control means, said control member being actuated by the three control means to operate the fluid valve assembly only when all three control means are in their effective positions.

3,858,782

PNEUMATIC FASTENER DRIVING TOOL

Raymond Visher Pomeroy, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Oct. 19, 1973, Ser. No. 407,855
Int. Cl. B25c *1/04*
U.S. Cl. 227—8 **3 Claims**



1. A pneumatic fastener driving tool comprising; an air pressure source, a power head connected to said air pressure source, a piston in said power head adapted to be driven by compressed air from said air pressure source, valving in the power head for controlling the introduction of the compressed air to the piston, trigger mechanism associated with said valving, a nose piece connected to said power head and including means for receiving a drivable fastener, a driving blade connected to said piston and adapted to be driven through said power head into the nose piece to there engage a fastener for driving the fastener into a work surface, a magazine connected to the nose piece including feeding mechanism for feeding a clip of fasteners into the nose piece, an anvil carried by the nose piece and aligned with the fastener in the magazine which immediately follows the one contained in the nose piece, said anvil having a supporting surface adapted to support the said following fastener to protect the clip from fracturing as the leading fastener is severed from the clip by the driving blade, and means to move the anvil between a fastener supporting position and a retracted position to permit feeding of the fasteners into the nose piece.

3,858,783

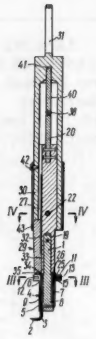
SURGICAL INSTRUMENT FOR STITCHING UP TISSUES WITH LENGTHS OF SUTURE WIRE

Nikolai Nikolaevich Kapitanov, ulitsa 8, Oktyabrskogo polya, 5, kv.9; Natalia Petrovna Petrova, 1, Novokuznetskaya ulitsa 4, kv. 40; Nina Vasilievna Jurasova, ulitsa Obrucheva 14, kv. 43, all of Moscow, and Vladimir Petrovich Kharchenko, Moskovskoi oblasti, dom 18, kv. 7, Stepanovskoe, Moskovskoi oblasti, all of U.S.S.R.

Filed Nov. 20, 1972, Ser. No. 308,049
Int. Cl. B25c *1/00*
U.S. Cl. 227—108 **3 Claims**

1. A surgical instrument for stitching up tissues with lengths of suture wire, comprising: a body in the form of a stem; a handle provided at one end of said body and a die at the other end, said die having the form of a curved needle with a guide groove provided in an inner concave portion thereof and serving to push the lengths of wire therealong; a rotatable

magazine for the lengths of wire, freely mounted on said body; a pushrod reciprocably mounted with respect to said body; and a projection of said pushrod having a flat portion for engaging a length of the wire, and a curved groove therein for



the final bending of the length of wire after it has left said guide groove; said pushrod pushing out the length of the wire from said magazine during its movement toward said die, pushing it along said guide groove, and bending it to form a ring.

3,858,784

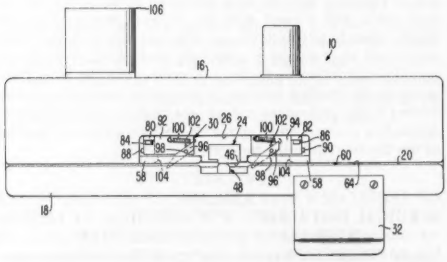
MECHANISM FOR INCREMENTAL MOVEMENT OF VERTICAL FRAME

John C. Diepeveen, 1737 Kimberly Dr., Sunnyvale, Calif. 94087

Filed Mar. 16, 1973, Ser. No. 342,231

Int. Cl. B23k *1/00, 37/04*

U.S. Cl. 228—4 **18 Claims**



1. Apparatus for handling a planar frame comprising: a support; means on the support for positioning a planar frame in a vertical plane for movement along a predetermined path relative to the support; means adjacent to said path for applying heat to a portion of the frame when the latter is in said plane; actuatable means shiftably mounted on the support for moving the frame relative thereto through an incremental distance along said path; means coupled with said moving means for actuating the same; and means movable transversely of said plane and relative to said support in response to the actuation of the moving means for releasably clamping the frame to the support heat applying means.

3,858,785

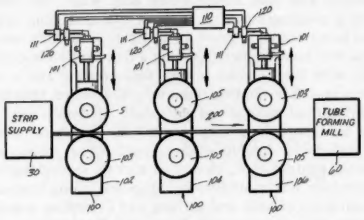
APPARATUS FOR MAKING HEAT EXCHANGER TUBE

Charles D. McLain, Alton, Ill., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 214,034, Dec. 30, 1971,. This application June 18, 1973, Ser. No. 371,133

Int. Cl. B23k *1/20*

U.S. Cl. 228—17 **8 Claims**



1. An apparatus for forming a heat exchanger tube comprising:

embossing means communicating in line with a supply of metal strip for embossing at least one heat exchange enhancement pattern on at least one major surface of said metal strip, said pattern extending throughout only a portion of the strip thickness;

actuating means for actuating said embossing means to bring it into and out of embossing contact with said strip; sequencing means communicating with said actuating means for appropriately sequencing the actuation of the embossing means;

tube forming means communicating in line with said patterned metal strip for forming said strip into the shape of a tube having longitudinally extending strip edges; and

joining means communicating in line with said longitudinally extending strip edges for joining them together to form the tube.

3,858,786

ANGULAR CONTAINER, IN PARTICULAR AN EATING BOWL, OF FLEXIBLE FOIL MATERIAL

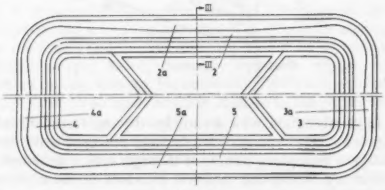
Georg Vogt, Finnentrop, Germany, assignor to Ohler Eisenwerk Theob. Pfeiffer, Plettenberg-Ohle, BRD, Germany

Filed Sept. 11, 1972, Ser. No. 287,652

Claims priority, application Germany, June 5, 1972, 2227311

Int. Cl. B65d *1/40*

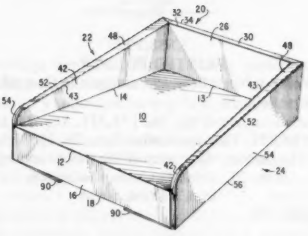
U.S. Cl. 229—3.5 MF **2 Claims**



1. In a several sided container of flexible foil material, particularly for reception and packaging of food, the container having plural sidewalls and having laterally directed, beaded edge shoulders formed on the sidewalls in bordering relation with the container opening, said beaded edge shoulders having ends at container corners, wherein at least some of the sidewalls tend to arch outwardly by effect of material filling the container, the improvement being comprised in that, at least on those of such sidewalls tending to arch outwardly, the beaded edge shoulder widens gradually in a direc-

tion toward the inside of the container from the ends thereof to the lengthwise central zone thereof, the outer edge of such beaded edge shoulder being straight, each said widened beaded edge shoulder curving toward the inside of the container, defining a curved inner edge on such beaded edge shoulder, said sidewall provided with a said widening bead edge shoulder including a nonplanar upper portion joined to and following the inner edge of the bead edge shoulder and having a substantially planar bottom portion joined to the base of the container by a straight linear edge, wherein such bulging of the sidewalls is eliminated.

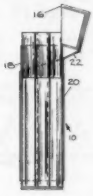
3,858,787
DISPOSABLE PAINT TRAY
Robert A. Bamburg; Farris N. Duncan, both of West Monroe, and Roger M. Floyd, Monroe, all of La., assignors to Olinkraft, Inc., West Monroe, La.
Filed Feb. 25, 1974, Ser. No. 445,664
Int. Cl. B65d *5/22*
U.S. Cl. 229—34 R **23 Claims**



1. A liquid tight paint tray comprising:
an inclined bottom panel of rectangular configuration defined by an upper front edge, a lower back edge and a pair of inclined side edges therebetween;
a back wall extending upward from the back edge of said bottom panel;
an opposed pair of side walls extending upward from the respective inclined side edges of said bottom panel and forming a pair of back corners with said back walls;
a pair of side panels depending downward from said respective side walls and extending below said bottom panel; and
base panel means disposed beneath said inclined bottom panel in a substantially level orientation and extending from at least one side panel substantially the length of said bottom panel between said upper front and lower back edges thereof.

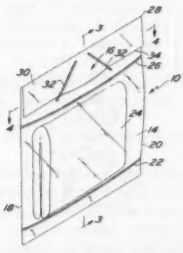
3,858,788
COMPOSITE DISPENSING PACKAGE
Floyd L. Phillips, Jr., Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed June 6, 1973, Ser. No. 367,597
Int. Cl. B65d *5/66, 85/10*
U.S. Cl. 229—44 CB **1 Claim**

1. A dispensing carton comprising a box element and a casing element mounted on said box element, wherein said box element includes:
a. a product containing portion including,
i. spaced, parallel front and back panels approximately the same size, said front panel having a recessed portion to permit easy access to the products,
ii. spaced, parallel side panels located between said front and back panels, and
iii. a bottom panel, closing one end of said product containing portion while the other end remains open; and
b. a lid portion including:
i. spaced, parallel front and back lid panels, said front lid panel being of greater height than said back lid panel and extending over said recessed portion of said front panel when said lid portion is in a closed position, said back lid panel being integrally formed with said back panel of said product containing portion,
ii. a pair of lid side tabs disposed between said front and back lid panels, said side tabs having slanted lower edges,
iii. a top panel disposed between said front and back lid panels and said side tabs, and
iv. said lid portion adapted to pivot between the closed position covering the open end of said product containing portion and an open position exposing the product; and wherein said casing element includes:
c. a sleeve including:
i. spaced, parallel forward and rear panels, said forward panel being lesser in height than said rear panel,



ii. spaced, parallel side panels located between said forward and rear panels, said side panels having slanted upper edges which are contacted by said slanted lower edges of said lid portion when said lid portion is in its closed position,
iii. said sleeve surrounding said product containing portion and being mounted for reciprocation between a first position when said lid portion is in its closed postion and a second position when said lid portion is in its open position; and
d. a flap integrally formed with the upper end of said rear panel and attached to the top panel of said lid portion, said flap being adapted to restrain the movement of said lid portion as said sleeve is reciprocated to its second position, thereby causing the lid portion to pivot and assume its open position.

3,858,789
PLASTIC BAG
Henry Verbeke, Tannersbrook Rd., Chester, N.J. 07930
Filed Apr. 2, 1973, Ser. No. 347,027
Int. Cl. B65d *33/06*
U.S. Cl. 229—62 **8 Claims**



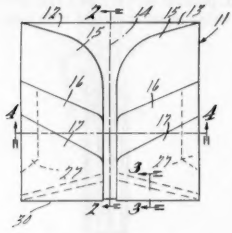
1. A plastic bag having a front wall, a rear wall, a closed bottom and a handle on said bag, said handle comprising a flap formed from said front and rear walls, and being folded over against said rear wall, a pair of linear heat seals securing said flap to said front and rear walls, said heat seals being posi-

tioned inwardly from the side edges of said front and rear walls and being angled towards each other, said heat seals forming a pocket therebetween, said heat seals being spaced a distance whereby a hand may be inserted in said pocket, with at least some of the fingers of said hand contacting said heat seals when said hand is in said pocket.

3,858,790
MULTI-POCKET CONTAINER

Norman J. Humphrey, 17123 Sprenger, East Detroit, Mich. 48021

Filed Jan. 12, 1973, Ser. No. 323,138
Int. Cl. B65d *27/08*
U.S. Cl. 229—72 **4 Claims**

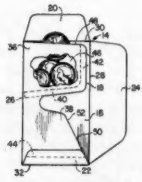


1. In a multi-pocket container made from a durable paper-like material, a sheet of material having a substantially square back section, top wing portions hinged to each side of the back section, bottom central wing portions hinged at the bottom of the back section, bottom wing portions hinged at the side edges of the bottom central portions, the top wing portion being folded onto the central square section, the bottom wing portions being folded onto the bottom central wing portions which are folded onto the folded top wing portions with the hinge line between the bottom central wing portions and the back section forming the bottoms of the three pockets provided thereby at each side of the back section, flaps cut from the top wing portions and hinged to the side edges of the square section, and means securing the bottom wing portions to said flaps so that the top and bottom wing portions are independently supported in hinged relation to the side edges of the square section.

3,858,791
BANKING ENVELOPE

Wilfred H. Gendron, Wilbraham, Mass., assignor to United States Envelope Company, Springfield, Mass.

Filed Aug. 20, 1973, Ser. No. 390,125
Int. Cl. B65d *27/08*
U.S. Cl. 229—72 **5 Claims**

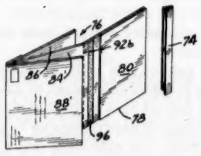


1. A banking envelope for use in transporting both coins and currency, or similar items, said envelope comprising: a rectangular rear panel having two parallel side edges and two parallel end edges, said side edges being longer than said end edges and said end edges consisting of a top end edge and a bottom end edge, a front panel connected to said rear panel along a fold line defining one of said side edges and immediately overlying said rear panel, means sealing said front panel to said rear panel to form a coin pocket therebetween having a mouth adjacent said top end edge, a top flap connected to said rear panel along said top edge and adapted to be folded along said top edge into overlying relationship with said front panel to close said coin pocket mouth, means defining a currency pocket including a currency flap extending upwardly from said bottom end edge, said currency flap having a free marginal edge portion facing generally upwardly and toward the other of said edges of said rear panel and defining a mouth for said currency pocket, said currency flap having an upper end spaced below said top flap when said top flap is folded to close said coin pocket, and a side flap connected to said rear panel along said other side edge of said rear panel, said side flap having a dimension perpendicular to said side edges less than that of said rear panel and said side panel also being foldable along said other side edge so as to at least partially overlie currency received in said currency pocket and as so folded being partially receivable in said mouth of said currency pocket so as to be held in said folded condition by said currency flap.

3,858,792
PRINTED FOLDER

John K. Volkert, Northfield, Ill., assignor to Compak Systems, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 174,321, Aug. 24, 1971, Pat. No. 3,718,277. This application Feb. 26, 1973, Ser. No. 335,580. The portion of the term of this patent subsequent to Feb. 27, 1990, has been disclaimed.
Int. Cl. B65d *27/06*
U.S. Cl. 229—73 **10 Claims**



1. A folder for distributing printed material plus a sealed packet, which folder comprises

a single elongated sheet folded upon itself to provide a plurality of panels hingedly interconnected to one another,

a first said panel being folded and connected along three edges thereof to a second said panel to thereby define a completely sealed packet the fourth edge of said packet being formed by a fold line along which said first and second panels are joined,

said remaining panels including a third, a fourth and a fifth panel, said third and fourth panels being hinged together along a fold line, and said fourth and fifth panels being hinged together along another fold line, said fifth panel being connected by adhesive or the like to said third panel to maintain said sheet in folded condition and form a wrapper which surrounds all of said other panels; and

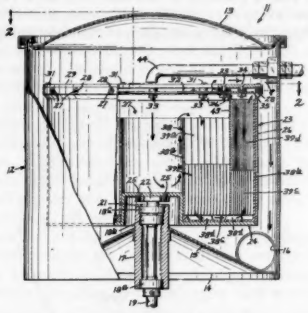
a line of perforations extending through said third and fourth panels adjacent their common fold line which forms one edge of said folder, said line of perforations defining a tear strip separable from the remainder of said folder to transform said folder into a multipage booklet, all of the pages of which booklet are interconnected.

3,858,793

CARTRIDGE CENTRIFUGE

Denis J. Dudrey, Minneapolis, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Feb. 28, 1973, Ser. No. 336,505
Int. Cl. B04b 1/06, 1/12, 15/06
U.S. Cl. 233—2 33 Claims



1. Centrifuge apparatus for separating particulate matter from a fluid, comprising:

a. a stationary enclosure having fluid inlet means and outlet means;

b. a centrifuge mounted within the enclosure for rotation about a predetermined axis, the centrifuge defining a fluid receiving area disposed in communication with the inlet means to receive uncleaned fluid therefrom, and constructed to deliver cleaned fluid to the outlet means;

c. the centrifuge further comprising a plurality of passages disposed in essential alignment with said rotational axis at varying radial distances therefrom, the passages being in commom inlet communication with said fluid receiving area;

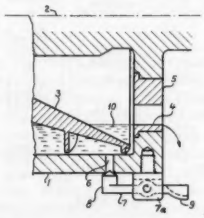
d. and means associated with the centrifuge for receiving essentially all fluid passing through said passages and for causing said fluid to attain maximum angular momentum after leaving said plurality of passages, whereby uniform, parallel flow through said passages is effected.

3,858,794

SLUDGE CENTRIFUGE

Carl-Goran Nilson, Tullinge, and Sven Olov Olsson, Farsta, both of Sweden, assignors to Alfa-Lavel AB, Tumba, Sweden

Filed Mar. 22, 1974, Ser. No. 454,002
Claims priority, application Sweden, Mar. 22, 1973, 40263/73
Int. Cl. B04b 1/10, 1/20
U.S. Cl. 233—7 5 Claims



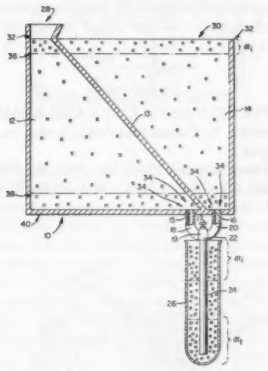
1. In a sludge centrifuge, the combination of a centrifugal rotor for receiving a sludge-containing liquid to be separated, the rotor being mounted for rotation about an axis and having a liquid-level-maintaining outlet for clean-separated liquid, the rotor also having a peripheral outlet located at the greatest radius of the inside of the rotor wall, a conical screw mounted in the rotor coaxially thereof and operable to convey separated sludge for discharge from the rotor at a region thereof remote from said outlets, a valve coacting with said peripheral outlet for opening and closing the same, and control means associated with said valve and operable by the action of liquid discharged from said level-maintaining outlet to maintain the valve in condition to close said peripheral outlet, said valve operating to open said peripheral outlet in response to interruption of the liquid discharge from the level-maintaining outlet.

3,858,795

METHOD FOR WASHING BLOOD CELLS

John E. Joyce, South Weymouth, Mass., assignor to International Equipment Company, Needham Heights, Mass.

Division of Ser. No. 330,880, Feb. 8, 1973, Pat. No. 3,813,618.
This application Oct. 23, 1973, Ser. No. 408,940
Int. Cl. B04b 5/02
U.S. Cl. 233—14 R 9 Claims



1. A method for washing blood cells comprising the steps of loading a vessel with a liquid which is less dense than blood cells in such a manner that the liquid increases in density from the top of the vessel to the bottom thereof, thereafter forcing blood cells to be washed from the top of the vessel toward the bottom of the vessel through the stationary liquid to strip the blood cells and thereby produce washed blood cells.

3,858,796

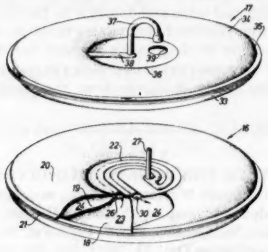
CONTAINER FOR USE IN TREATMENT OF LIQUID

Hans Peter Olof Unger, Oregrundsgatan 1, Lidingo; Eric J. H. Westberg, Rodstugevagen 14, Stockholm, and Stephan L. Schwartz, Granitvagen 1, Lidingo, all of Sweden

Division of Ser. No. 233,538, March 10, 1972, Pat. No. 3,724,747. This application Nov. 14, 1972, Ser. No. 306,218
Claims priority, application Sweden, Mar. 15, 1971, 3309/71; Mar. 15, 1971, 3310/71
Int. Cl. B04b 7/12, 15/06
U.S. Cl. 233—27 6 Claims

1. A container for use in treatment of liquid, particularly in centrifugal separation of liquid into fractions of different densities, comprising walls of flexible sheet material, the walls defining between them a closed annular compartment for holding a discrete quantity of liquid, said walls further defining a central area located radially inwardly of the inner edge of the compartment, said central area being fixed with respect to the compartment, the walls forming said central area further defining a collapsible conduit through which liquid may be conveyed into or out of the container compartment, said

conduit being integrally connected with central area and hence also with the container walls so as to be fixed relative to the walls, one end of the conduit connected to the interior of the compartment, the conduit extending from said one end



within the central area to a further open end also within the central area for communication with a further fluid transporting means the fixed section of the conduit thus being disposed and arranged to serve as the liquid conveying member of peristaltic pump.

3,858,797

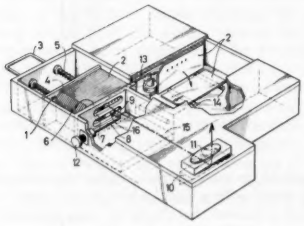
INSPECTION DEVICE IN CARD READERS

Tetsuo Takeuchi, 7, Tatsumidai Nishi 3-chome, Ichiharashi, Chiba, Japan

Filed July 25, 1973, Ser. No. 382,526

Int. Cl. G06k *13/08, 7/10;* **B65h** *7/00*

U.S. Cl. 235—61.11 R **1 Claim**



1. An inspection device for a card reader of the type having an automatic card reading station, comprising a magazine for accommodating a stack of cards on edge in the vertical position and having a vertical front plate for retaining said stack, a push plate pushing the stack against said front plate of the magazine, card feed means for delivering cards one by one from the front of said stack to said card reading station, a window provided in said front plate for exposing indicia on the front surface of each of the cards, an optical prism exposed to said indicia through said window and diverting light therefrom in an upward direction, and a horizontally disposed enlarging lens positioned above said prism for producing a visually observable image of said indicia at a position above said lens.

3,858,798

LETTERING LAYOUT CALCULATOR

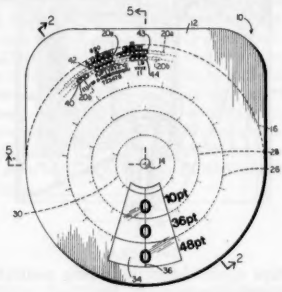
Jeffrey Feingold, 28 Wendell St., Apt. 22, Cambridge, Mass. 02138

Filed Aug. 3, 1973, Ser. No. 385,487

Int. Cl. G06c *27/00*

U.S. Cl. 235—83 **9 Claims**

1. A calculator for calculating the total length of a group of characters of a predetermined type face and point size, the calculator comprising first and second planar members connected for pivotal rotation relative to one another, said first planar member being provided with at least one series of uniformly spaced engaging means circularly arranged about the pivot point of said planar members and further being provided with a plurality of concentric calibrated scales imprinted thereon at least portions of which are visible through said second planar member, each scale being associated with another type face point size, said second planar member being provided with a plurality of arcuate slots each representing characters having equal widths and forming arcs of concentric circles about the pivot point, each arcuate slot being disposed



opposite a different number of said engaging means corresponding to the width of a character represented by the respective arcuate slot, whereby engagement and dialing of said first planar member relative to said second planar member and movement of said engaging means a number of spaces represented by said arcuate slot advances said scales relative to said second planar member to simultaneously provide indications of the respective lengths of the dialed characters in each of the type face point sizes for which said scales have been calibrated.

3,858,799

CONTROL SYSTEM FOR TRANSFER OF KEY INPUT DATA IN TABLE-TYPE ELECTRONIC COMPUTER,

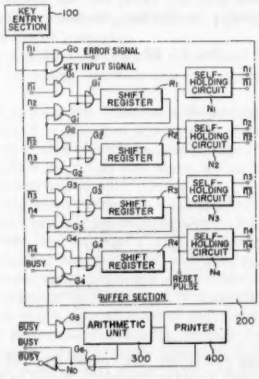
Ozawa Yoshio; Mitsui Hidetsuqu, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed July 13, 1973, Ser. No. 378,805

Claims priority, application Japan, July 14, 1972, 47-70635

Int. Cl. G06f *3/00, 13/00*

U.S. Cl. 235—156 **8 Claims**



1. A control system for transfer of input data in a table-type computer comprising:

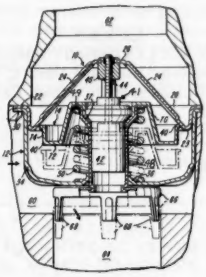
a key input section for entering input data into the computer;
an arithmetic unit for performing arithmetic operations on said input data and for providing results of said operations;
a printer for recording results provided by the arithmetic means; and
a buffer section comprising:
a. a plurality of series connected recirculating dynamic shift registers connected between said key input section and said arithmetic unit, with the first shift register of the series connected to the key input section and the last shift register of the series connected to the arithmetic unit;
b. a plurality of self-holding circuits connected in a one-to-one correspondence with said plurality of shift registers, each self-holding circuit providing a first output signal while input data are stored in its corresponding shift register and a second input signal while its corresponding shift register is empty; and
c. control means including a plurality of gate means interposed between the key input section and the first register, between adjacent registers, and between the self-holding circuits and the registers, said control means responsive to said first and second output signals from the self-holding circuits to control said gate means to transfer input data from the key input section into the first register only when said first register is empty, and to transfer input data from each register into the succeeding register in the series when said succeeding register is empty but to recirculate the data in each register whose succeeding register is not empty.

3,858,800

THERMALLY RESPONSIVE VALVE APPARATUS

Backman Wong, Wayland, Mass., assignor to Standard-Thomson Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 352,195, April 18, 1973,. This application May 9, 1973, Ser. No. 358,590
Int. Cl. F01p *7/16*
U.S. Cl. 236—34 **3 Claims**



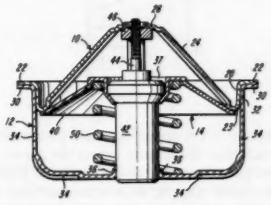
1. Thermally responsive valve apparatus comprising a one-piece sheet metal base member inc ding a first cylindrical portion integrally connected to a first annular flange portion projecting radially outwardly from said first cylindrical portion, said base member further including a bracket portion projecting downwardly from said cylindrical portion and defining a lower guide opening aligned axially with said first cylindrical portion, a one-piece sheet metal bridge member including a second cylindrical portion integrally connecting an inwardly disposed annular seat portion to a second annular flange portion projecting radially outwardly from said second cylindrical portion, said second cylindrical portion of said bridge member having an outer diameter substantially the same as the inner diameter of said first cylindrical portion of said base member and in interfitting relation with said first cylindrical portion surrounding said second cylindrical portion, said second annular flange portion of said bridge member disposed in overlying adjacent relation on said first annular flange portion of said base member, a closure member disposed within said base member and having an outer annular portion engaging said seat portion, and a temperature responsive actuator positioned within said guide opening and connecting said closure member to said bridge member.

3,858,801

THERMALLY RESPONSIVE VALVE APPARATUS

Wong Backman, Wayland, Mass., assignor to Standard-Thomson Corporation, Waltham, Mass.

Filed Apr. 18, 1973, Ser. No. 352,195
Int. Cl. F01p *7/16*
U.S. Cl. 236—34 **3 Claims**



1. Thermally responsive valve apparatus comprising a one-piece sheet metal base member including a first cylindrical portion integrally connected to a first annular flange portion projecting radially outwardly from said first cylindrical portion, said base member further including an integral bracket portion projecting downwardly from said cylindrical portion and defining a lower guide opening aligned axially with said first cylindrical portion, a one-piece sheet metal bridge member including a second cylindrical portion integrally connecting an inwardly disposed annular seat portion to a second annular flange portion projecting radially outwardly from said second cylindrical portion, said second cylindrical portion of said bridge member having an outer diameter substantially the same as the inner diameter of said first cylindrical portion of said base member and in interfitting relation with said first cylindrical portion surrounding said second cylindrical portion, said second annular flange portion of said bridge member disposed in overlying adjacent relation on said first annular flange portion of said base member, a closure member disposed within said base member and having a frusto-conical portion, said closure member further including an outer peripheral edge portion engaging said seat portion, and a temperature responsive actuator positioned within said guide opening and connecting said closure member to said bridge member.

3,858,802

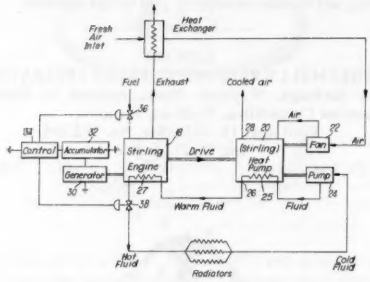
FLUID HEATING SYSTEM

Andrew Ferrand Stobart, The Old Hall, Kilsby, near Rugsby, England

Filed Oct. 3, 1972, Ser. No. 294,549
Claims priority, application Great Britain, Oct. 5, 1971, 46347/71; Nov. 11, 1971, 52515/71; Mar. 1, 1972, 9632/72
Int. Cl. B60h *1/00*
U.S. Cl. 237—12.1 **6 Claims**

1. Apparatus for heating a fluid comprising:
a. A Stirling cycle hot gas engine including at least one fuel-heated head and cylinder, housing piston and displacer means operatively located with respect to duct means communicating with both sides of the displacer means, and the engine having a surrounding integrally connected cooling system for receiving fluid;

b. a Stirling cycle heat pump including at least one head and cylinder housing piston and displacer means operatively located with respect to duct means communicating with both sides of the displacer means, and the pump having a surrounding integrally connected heat transfer circuit for receiving fluid;



c. drive means interconnecting said piston and displacer means such that the engine drives the pump; and

d. fluid circuit means for containing and circulating said fluid, the fluid circuit means connecting the integral cooling system of the engine and the integral heat transfer circuit of the pump directly in series.

3,858,803

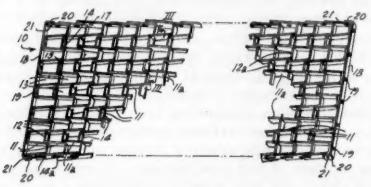
VEHICLE WHEEL TRACTION MAT

Alfred Gantert, 5620 East Lakeshore Dr., Wonder Lake, Ill. 60097

Filed Aug. 15, 1973, Ser. No. 388,467

Int. Cl. E01b *23/00*

U.S. Cl. 238—14 **20 Claims**



1. A traction mat having opposite sides and opposite ends and especially suitable for use to provide efficient traction under a vehicle wheel, comprising:

a series of substantially rigid serpentine traction strips extending between said sides and having alternately oppositely projecting undulations and intervening oppositely opening indentations defined by crest portions which face generally toward said ends and leg portions which face generally toward said sides;

the crest portions of the undulations being interdigitated by projecting into the mouth ends of the indentations;

means articulately coupling the interdigitated crest portions of the undulations and thereby connecting the strips into flexible mat form and providing upper and lower traction mat faces along the opposite edges of the strips;

certain of the strips being of minor width;

others of the strips being substantially wider than said minor width strips;

and a plurality of the narrower strips intervening between adjacent width strips;

whereby the wider strips provide superior traction projections from at least one of said faces of the mat.

3,858,804

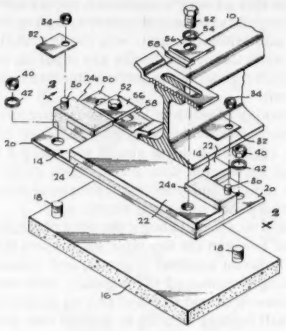
RAIL FASTENING ASSEMBLY

James D. Hixson, Pleasant Hill, Calif., assignor to R. M. Hixson, Spokane, Wash.

Filed Aug. 28, 1972, Ser. No. 284,130

Int. Cl. E01b *9/00*

U.S. Cl. 238—264 **6 Claims**



1. A fastener assembly for mounting a rail on a supporting bed, said assembly including: a base assembly comprising a top plate, a bottom plate, and a resilient electrically insulating member interposed between said top plate and said bottom plate; at least one rail clip supported on said base, said rail clip having at least one serrated side edge; fastener means including at least one stud extending through said top and bottom plates and through said resilient member for holding said base in an assembled condition; and securing means mounted on said base including at least one serrated member for permitting lateral adjustment of the rail with respect to said supporting bed, said serrated member of said securing means extending into coupled relationship with the serrated edge of said clip and over the top of said clip for securing said rail clip to said base assembly.

3,858,805

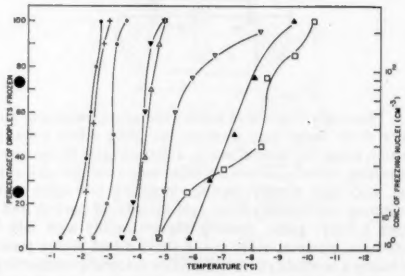
ICE NUCLEATION BY MICAS

Josephine H. Shen; Kamil Klier, and Albert C. Zettlemoyer, all of Bethlehem, Pa., assignors to Lehigh University, Bethlehem, Pa.

Filed Oct. 31, 1973, Ser. No. 411,438

Int. Cl. A01g *15/00*

U.S. Cl. 239—2 R **2 Claims**



1. A process of nucleating crystallization of a hydrogen-bonding ice crystal from a cloud or vapor medium, which comprises seeding the medium until crystals form by particles in a size range of from 0.01 and 10 micrometers comprising a synthetic fluorophlogopite mica having a composition at the

surface of $K_2 Mg_6Al_2 Si_6 O_{20}F_{4-x} (OH)_x$, where x is a number between 0 and 2.

3,858,806

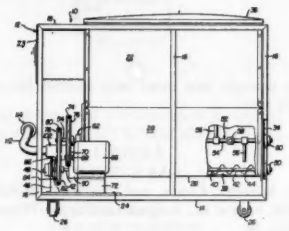
METHOD OF PRODUCING PARTICULATE MATERIAL

Ray J. Miller, Harsens Island, and Gerald W. Trabbic, Marshall, both of Mich., assignors to Comfort, Inc., Bloomfield Hills, Mich.

Division of Ser. No. 35,998, Aug. 20, 1970, Pat. No. 3,684,188. This application Aug. 9, 1972, Ser. No. 279,120

Int. Cl. A01n *17/02*; **A62c** *1/12*

U.S. Cl. 239—8 **9 Claims**



1. In a method of producing a particulate material suspended in air, under pressure, for application to structural parts or the like, comprising:

1. placing a quantity of particulate material in a container having a screw conveyor therein adjacent the bottom wall of the container;
2. delivering the particulate material in said container to the center section of a conduit by means of said screw conveyor, the cross sectional area of said center conduit section being substantially less than the cross sectional area of the end sections, one of said end sections communicating with the atmosphere and the other end section communicating with a pump means;
3. creating a venturi effect in said center conduit section by operating said pump means to draw air through said center section, suspending the particulate material and delivering the suspended material to said pump means;
4. comminuting the suspended material in said conduit, adjacent said pump means, with a beater;
5. pumping the comminuted particulate material, intermixed with air, to a nozzle means, under pressure; and
6. projecting the particulate material through said nozzle means and simultaneously adding a predetermined quantity of adhesive for application to a structural member, or the like.

3,858,807

APPARATUS FOR EMITTING VAPORS OF VOLATILE INSECTICIDAL AGENTS OR OF SIMILAR VOLATILE PRODUCTS

Bernard Rabussier, Aventon; Jean-Pierre Mandon, Poitiers, and Claude Hennart, Aubervilliers, all of France, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 839,721, July 7, 1969, Pat. No. 3,698,974. This application Feb. 18, 1972, Ser. No. 227,578

Int. Cl. A24f *25/00*; **A61l** *9/04*

U.S. Cl. 239—56 **19 Claims**

1. An apparatus adapted for emitting at room temperature vapors of a volatile active liquid product, comprising

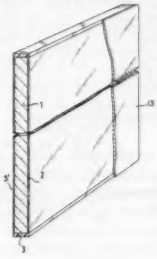
α. an evaporator unit consisting essentially of

a. a plate body having two large end faces at opposite sides thereof and comprising

i. at least one fibrous product absorbing plate; and

ii. a diffusion layer of thermoplastic polymeric material 10 to 80 μ thick capable of permitting said product to diffuse therethrough and vapors of said product to evaporate from an outer surface thereof at an effective rate, said layer being superimposed on at least one of the two larger, principal outer faces of said plate body, and being intimately joined with its inner face to the adjacent large principal surface of said plate body; and

b. a frame made of a material selected from metal and synthetic thermoplastic material, being impervious to said liquid product and the vapors of the latter, and



having at least one window registering with an aforesaid diffusion layer and being sealingly connected by means of at least a marginal frame portion about said window to the underlying peripheral zone of said diffusion layer, said vapor-impervious frame hermetically enclosing said body on all sides of the latter which are free from a diffusion layer; and

β. openable or removable protective means impervious to said liquid product and vapors thereof and adapted for sealing in said apparatus after absorption of active liquid product in said plate body.

3,858,808

OXY-ACETYLENE TORCHES

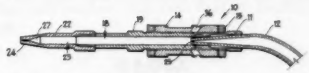
Nicholas Thomas Edward Dillon, 10 Murtle Band Ter., Stonyfell, Australia (5066)

Filed Dec. 26, 1972, Ser. No. 318,537

Claims priority, application Australia, Dec. 30, 1971, 7548/71

Int. Cl. B05b *7/06*

U.S. Cl. 239—429 **3 Claims**



1. An oxy-acetylene torch attachment comprising a tubular adaptor having an inner bore of such diameter as to engage over the outer surface of the hand piece bend of a welding torch, a tubular member having a cylindrical wall defining a mixing chamber extending in a downstream direction from the adaptor and terminating in a nozzle at the discharge end of the mixing chamber, a hollow body having a threaded bore, the adaptor and tubular member each having a thread on its outer surface threadably engaging said threaded bore, the downstream end of said adaptor terminating

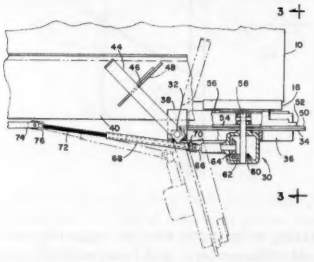
in a frusto conical shape which converges in a downstream direction, the upstream end of said tubular member also terminating in a frusto conical shape which is complementary to said adaptor end, there being a plurality of air inlet apertures spaced circumferentially around the hollow body and extending inwardly through the walls of the hollow body to terminate at their inner ends in said threaded bore at the locality of said frusto conical tubular

member and adaptor ends, said air inlet apertures sloping in a downstream direction as they extend radially inwardly.

3,858,809
LIQUID MANURE TANK SPREADING ROTOR

Paul A. Luthman, New Bremen, and Thomas R. Fischer, Wapakoneta, both of Ohio, assignors to Avco Corporation, Coldwater, Ohio

Filed Nov. 2, 1973, Ser. No. 412,262
Int. Cl. A01c *19/00*
U.S. Cl. 239—684 **15 Claims**



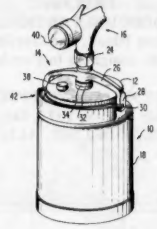
1. A liquid manure spreader comprising:
a tank mounted for ground movement and being fillable with liquid manure;
means for controlling flow of liquid manure from the bottom of said tank;
a rotor comprising an annular housing and a rotatable rotor element for distributing liquid manure radially outward, said rotor having means permitting distribution of said liquid manure from said housing;
means for driving said rotor, said means including a rotary mechanical interconnection between a point on said tank and said rotor, the drive train between said points being flexible to permit said rotor housing to be swung down; and
means for pivotally mounting said rotor assembly between a first position in which the plane of rotation of said rotor element is generally underneath said flow control means on said tank and a second position wherein said rotor housing is swung away from said flow control means for cleaning out residual manure in said tank and rotor housing.

3,858,810
SPRAY PAINT CONTAINER AND ATTACHMENT THEREFOR

Larry E. Seeley, 1278 Front St., Binghamton, N.Y. 13905, and Edward H. Seeley, Box 72, Great Bend, Pa. 18105

Filed July 31, 1973, Ser. No. 384,280
Int. Cl. B05b *15/04*
U.S. Cl. 239—121 **15 Claims**

1. An attachment for collecting paint leaked from a spray paint container having a generally cylindrical neck defining an opening for the container about which the spray container lid and spray gun are releasably attached and a pair of generally diametrically opposed pins projecting radially outwardly from the neck of the container for securing the lid thereto comprising a receptacle having opposed inner and outer walls spaced one from the other and a bottom wall therebetween, said receptacle being arcuately shaped for disposition about the neck of the spray paint container with said inner wall in close fitting relation therewith, said spaced inner and outer walls defining an arcuate chamber therebetween opening through the top of said receptacle for receiving paint leaked from the container and means for securing said receptacle about the neck of the paint container, said receptacle having a pair of

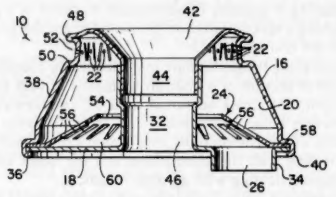


openings through said inner wall thereof for receiving the respective pins.

3,858,811
GAS BURNER

Dennis S. Mizerak, Cicero, and Charles E. Stohrer, Jr., Hickory Hills, both of Ill., assignors to Harper-Wyman Company, Hinsdale, Ill.

Filed July 2, 1973, Ser. No. 375,769
Int. Cl. B05b *1/14*
U.S. Cl. 239—553.3 **11 Claims**



1. In a gas burner, a burner chamber including uniformly arranged outlet means about the chamber, and a gas inlet, the improvement comprising baffle means mounted within said burner chamber and positioned between said gas inlet and said burner ports, said baffle means being inclined upwardly and inwardly toward a central opening for the passage of gas therethrough and having a plurality of uniformly spaced baffle slots of uniform configuration surrounding said central opening and extending toward said opening, said gas inlet being non-aligned with said central opening and said central opening having an area substantially larger than the area of any one baffle slot.

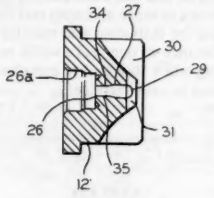
3,858,812
SPRAY NOZZLE FOR LOW PRESSURE SPRAY AND UNIFORM SPRAY PATTERN

Robert P. Williams; Ted Lee Butterfield, both of Naperville, and Lyle J. Emory, Darien, all of Ill., assignors to Spraying Systems Co., Wheaton, Ill.

Filed Nov. 23, 1973, Ser. No. 418,728
Int. Cl. B05b *1/00*
U.S. Cl. 239—599 **6 Claims**

1. A spray nozzle suitable for use at relatively low spraying pressures and for defining a spray pattern of oval-shaped form and with a tapered distribution of the spray pattern at the edges thereof, comprising a nozzle body having a cylindrical passage therein, said passage having an open entrance end and a discharge end terminating at a wall extending across the passage, an orifice in said wall and extending across the axis of said passage, said orifice being disposed symmetrically relative to the axis of said passage and being oval in form, said

passage having a plurality of spaced protuberances formed in the wall thereof adjacent the entrance end of the passage whereby the entrance end of the passage has a generally oval

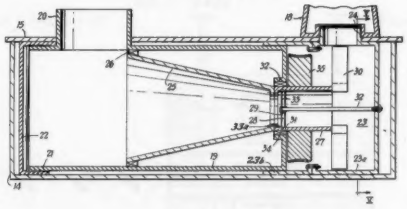


cross-sectional shape, said protuberances extending from the entrance end of said passage toward said discharge end by a short distance.

3,858,813
WATER CLOSETS

Montague Hiller, 20 Carrington Ave., Borehamwood, England

Continuation-in-part of Ser. No. 121,840, March 8, 1971, abandoned. This application Jan. 12, 1973, Ser. No. 322,971
Claims priority, application Great Britain, Mar. 9, 1970, 11258/70; Canada, Mar. 5, 1971, 106956; Japan, Mar. 8, 1971, 46-11896; Mar. 5, 1971, 46-1441
Int. Cl. B02c *18/40*
U.S. Cl. 241—46.02 **8 Claims**

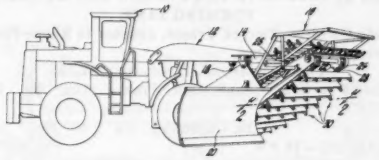


1. An effluent disposal unit comprising wall means defining a closable container, means in said wall means for coupling said container to an outlet from lavatory bowl means and communicating said container with said bowl means, means within said wall means for comminuting waste material, flushed from said bowl means into said container, into the form of an aqueous dispersion capable of flow through tubing having a diameter of from about 0.5 to about 0.75 inch without undergoing coagulation in said tubing, which comminuting means includes a duct which conically narrows from the region of said coupling means to a cutting arrangement and is closed at its smaller end by said cutting arrangement comprising fixed blade means and rotatable blade means positioned to rotate about an axis coincident with the axis of said fixed blade means, which axis is also coincident with the axis of said duct, the latter being coupled to said rotatable blade means, and means for imparting rapid rotation to said rotatable blade means, said duct being connected to said rotation imparting means, whereby said duct rotates at the same speed as said rotatable blade means, the disposal unit further comprising outlet means associated with said container and adapted for connection to said tubing, and means for transferring the aqueous dispersion to said tubing when the latter is connected to said outlet.

3,858,814
FLIGHT ASSEMBLY FOR COMPOSTER ELEVATING DEVICE

Karl F. Wagner, Jr., Stow, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1973, Ser. No. 414,333
Int. Cl. B02c *21/02*
U.S. Cl. 241—101.7 **1 Claim**

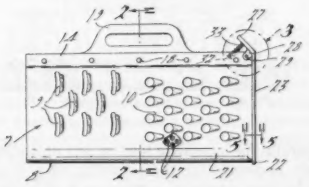


1. In a composter vehicle including a tractor having an elevating device mounted at the front end thereof, said elevating device having a plurality of equally spaced and parallel flight assemblies for shredding solid waste material, each of said flight assemblies comprising an elongated channel member, said channel member being U-shaped in cross section and having a base section integrally formed with a pair of outwardly extending and parallel legs, one of said legs being of a longer length than the other leg when the channel member is viewed in cross section and being adapted to contact the solid waste material when the elevating device is driven, a plurality of equally spaced plate members, means securing each of said plate members to said channel member between the legs thereof so as to rigidify said channel member along its length, each of said plate members having a portion adjacent said one of said legs located in a plane that is perpendicular to the longitudinal axis of the channel member, a plurality of teeth, each of said teeth having a plurality of equally spaced and axially aligned apertures formed therein, said portion of each of said plate members having a plurality of apertures formed therein adjacent to and within the confines of said one of said legs, the centers of said apertures in said each of said plate members being located along an axis parallel to the plane of said one of said legs and being adapted to register with said apertures in each of said teeth, and a plurality of bolts extending through the apertures in each of said teeth and the registering apertures in the associated plate member for securing the teeth thereto, each of said plate members having a greater number of apertures formed therein than are formed in each of said teeth whereby said each of said teeth can be adjustably positioned relative to said base section and thereby vary the amount that said each of said teeth extends beyond the ends of said legs.

3,858,815
VEGETABLE SHREDDER

J. Oliver Black, 18094 Parkside, Detroit, Mich. 48238

Filed Jan. 25, 1974, Ser. No. 436,504
Int. Cl. A47j *17/02*
U.S. Cl. 241—168 **10 Claims**



1. In a shredder, a stamped sheet of material having a pair of angularly spaced side walls, a bottom wall and two spaced

parallel flanges on the ends of said side walls, the flanges having aligned apertures therethrough and the side walls having operating areas stamped therein, a supporting bar between said flanges having apertures aligned with those in the flanges, and rivet means in said apertures for securing the flanges and supporting bar together.

3,858,816

YARN BUNDLE WITH PIECING END AND METHOD OF FORMING SAME

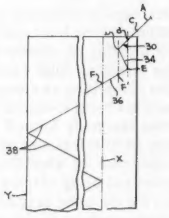
Claude Corbiere, Riorges, France, assignor to Rhone-Poulenc Textile, Paris, France

Filed Oct. 16, 1972, Ser. No. 297,731

Claims priority, application France, Oct. 29, 1971, 71.39876

Int. Cl. B65h *55/04*

U.S. Cl. 242—18 PW **6 Claims**



1. A method of forming a piecing end for a yarn bundle wound on a rotating support comprising the steps of

positioning a length yarn to be wound near an end of the support;

moving a yarn guide toward the end of the support;

catching the length of yarn to be wound with the yarn guide near the end of the support;

delivering the caught yarn for engagement with a rotating element to form an initial piecing winding around an end portion of the support; and

moving the yarn guide away from the end of the support to form a principal piecing winding over the initial piecing winding.

3,858,817

APPARATUS FOR AUTOMATIC CHANGING OF REELS IN A SPOOLER FOR WIRE PRODUCTS

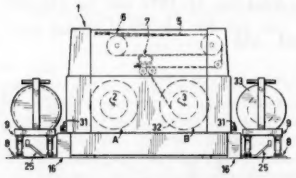
Asko Sakari Riekkinen, Kirkkonummi, Finland, assignor to Oy Nokia AB, Helsinki, Finland

Filed June 5, 1972, Ser. No. 259,903

Claims priority, application Finland, June 7, 1971, 1573/71

Int. Cl. B65h *67/06*

U.S. Cl. 242—25 A **7 Claims**



1. Apparatus for automatic loading and unloading of reels, in a plane perpendicular to a spooling axis, in a spooling machine for wire products, comprising a movable transport carriage for supporting at least two reels coaxially in line with the transverse direction of the carriage, a guiding track for the carriage located at the side of the spooler in parallel with the spooling axis, a transfer device for displacing the carriage by one reel's width at a time along said track, said spooler having an exchange opening, a lifting device located at the exchange opening of the spooler, a shaft parallel to the spooling axis, to perform a back and forward movement, said spooler being pivotally mounted on said shaft, and control means for activating said lifting device to move an empty reel from said carriage to the spooler and for activating said transfer device to move the carriage a distance of one reel's width in relation to said exchange opening when said reel is completely spooled and has been displaced to said carriage.

3,858,818

THREAD WINDUP APPARATUS AND PROCESS

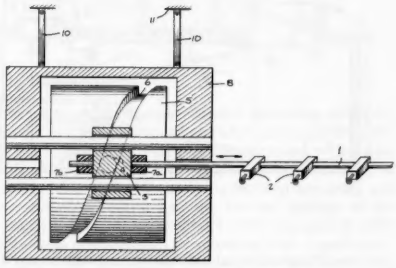
Bernhard Melz, Wattwil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland

Continuation of Ser. No. 221,972, Jan. 31, 1972, abandoned. This application Oct. 1, 1973, Ser. No. 402,178

Claims priority, application Switzerland, Feb. 12, 1971, 2127/71

Int. Cl. B65h *54/30*

U.S. Cl. 242—43 **2 Claims**

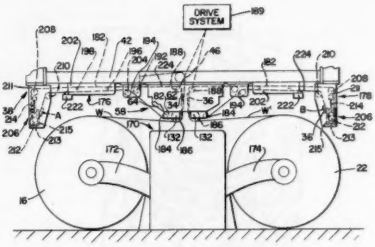


1. Apparatus of the class described comprising thread guide bar means arranged for oscillating movement, means controlling the stroke movements of said guide bar means, at least one elastically deformable reflector element (**7***a*, **7***b*) movable with the guide bar means, and stop means (**8**) freely pivotally suspended on a fixed structure in position to be engaged by said reflector element at the vertex of a stroke of said thread guide bar means and movable relatively to said fixed structure whereby kinetic energy of the moving mass of said guide bar means and controlling means and said reflector elements is absorbed and reversed by said deformable reflector element.

3,858,819
WEB SUPPLY APPARATUS

Richard A. Butler, Jr., Chestnut Hill, Mass., assignor to Butler Automatic Inc., Canton, Mass.

Filed Oct. 24, 1972, Ser. No. 299,713
Int. Cl. B65h 19/14, 19/20
U.S. Cl. 242—58.3 19 Claims

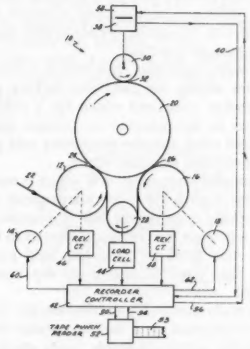


11. The web supply apparatus defined in claim 10 wherein the locating means are comprised of retainers at the splicing station for supporting the bar between the pressure applying means.

3,858,820
DOUBLE DRUM WINDER

Jere W. Crouse, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Sept. 27, 1973, Ser. No. 401,165
Int. Cl. B65h 17/12
U.S. Cl. 242—66 9 Claims

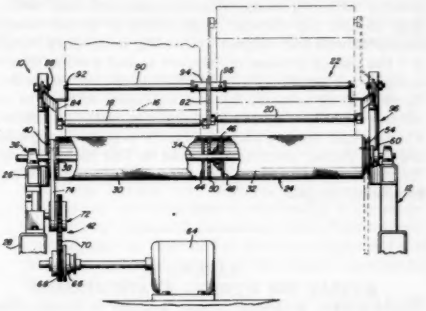


9. A method of controlling wound-in tension on a web winding machine comprising the steps of: driving a web roll with a pair of other rolls to form respective nips between the rolls; passing a web through one of the nips, about the web roll, through the other nip, through the one nip again between the first pass through that nip and the web roll and then winding the web on the web roll; and adjusting the web tension in accordance with a predetermined web tension parameter.

3,858,821
SINGLE OR DOUBLE ROLL MECHANISM FOR CLOTH WIND UP

Edward S. Beard, and Rodney H. Kirkner, Jr., both of P.O. Box 22, Spring City, Pa. 19475

Filed Aug. 7, 1973, Ser. No. 386,444
Int. Cl. B65h 17/08
U.S. Cl. 242—66 13 Claims

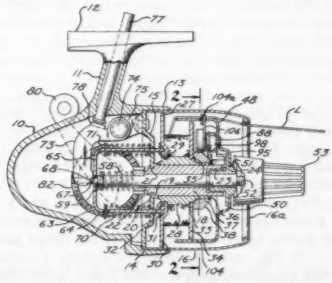


1. In a mechanism for winding up webs of fabric into rolls, a frame, at least two drive rollers, means mounted on the frame for rotationally supporting said drive rollers about a common axis fixed relative to the frame, drive means operatively connected to at least one of the drive rollers for rotation thereof, at least two roll supporting spindles on which said webs are adapted to be wound into the rolls, spindle support means carrying said spindles for independent pivotal displacement about a single pivotal axis parallel to said common axis of the drive rollers, and power operated means connected to said spindle support means for displacement of the spindles from positions in which the rolls supported thereon engage the drive rollers.

3,858,822
SPINNING REEL

Morris E. Wood, Bronson, Mich., assignor to True Temper Corporation, Cleveland, Ohio

Filed Feb. 14, 1972, Ser. No. 225,917
Int. Cl. A01k 89/00
U.S. Cl. 242—84.2 A 14 Claims



1. A spinning reel comprising a frame and support having an axis; a line spool mounted upon said support; said support having an axially facing abutment and a trip; a winding member; means mounting said winding member for manual rotation and axial movement with respect to said support; means resiliently biasing said winding member axially toward an initial position adjacent to said abutment and trip; a trip member; means movably mounting said trip member upon said winding member and means biasing a portion of said trip member inwardly toward the axis of said winding member

whereby said trip member moves in front of said abutment, when said winding member is moved axially forwardly away from said abutment, and holds said winding member in the forward position; a line pickup member; means movably mounting said line pickup member upon said winding member for movement between line pickup and line release positions and means biasing said pickup member to a line release position when said winding member is held in a forward position by said trip member only; said means mounting said pickup member affording independent movement thereof with respect to said trip member at all times; an ejector member associated with said support for moving said pickup member to a line pickup position in response to said winding member being moved axially back to said initial position; and said trip member being actuated by said trip upon rotation of said winding member to move out of alignment with said abutment whereby said winding member returns to said initial position and said pickup member is moved to line pickup position independently of said trip member after said trip member is completely tripped.

3,858,823

HANDLE FOR WINDING A TAPE MEASURE

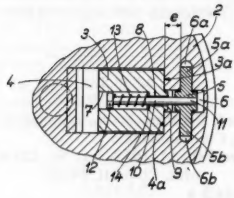
Michel Quenot, Besancon, France, assignor to Stanley-Mabo, Besancon, France

Filed Sept. 10, 1973, Ser. No. 395,993

Claims priority, application France, Sept. 15, 1972, 72.32904

Int. Cl. G05g *1/30*

U.S. Cl. 242—84.8 **7 Claims**



1. In a tape measure including a rotatable tape-drum having a rotary flange and a crank handle eccentrically mounted on the flange for rotatably driving the tape-drum, said flange having a recessed outer surface and said crank handle being mounted for pivotal movement between an actuating position extending outwardly of said outer surface and a stored position within said recess; the combination comprising an elongated groove in the inner surface of the flange juxtaposed the recess on the outer surface and having a central through aperture communicating with the recess, a first shaft mounted in said elongated groove and extending across said through aperture, said first shaft providing a pivot for movement of said handle between said actuating and stored positions, a second handle mounting shaft connected to said first shaft and extending outwardly through said aperture, said second shaft mounting the crank handle for rotary and axial movement relative thereto, and spring means mounted within the handle and cooperating with the second shaft for constantly biasing said handle toward said first shaft in both said actuating and stored positions.

3,858,824

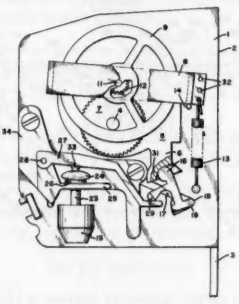
DUAL ACTION SAFETY SEAT BELT RETRACTOR

Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 27, 1973, Ser. No. 345,380

Int. Cl. B65h *75/48;* **A62b** *35/00*

U.S. Cl. 242—107.4 **15 Claims**



1. In a vehicle safety seat belt system, the combination comprising:

a. a support having a base and two walls extending therefrom;

b. a shaft journaled on the support and adapted for connection to a seat belt, said shaft being rotatable in a winding direction and in the opposite unwind direction, said shaft having a first gear on one end thereof;

c. a biasing member connected to the support and to the shaft, urging it to rotate in its winding direction;

d. a ratchet wheel fixed to the rotatable shaft;

e. a pawl mounted pivotally on the support for engagement with the ratchet wheel, said pawl being movable between a normally unlocked position and a locked position for engagement with the ratchet wheel to stop rotation of the shaft in its unwind direction;

f. a first normally stationary arm which is movable upon actuation for urging the pawl into locking engagement with the ratchet wheel and which has a contact portion unconnected to but adapted to contact said pawl for actuating said pawl, thereby permitting said pawl to also pivot separate from said first arm;

g. a second normally stationary arm which is movable upon actuation for urging the pawl independent of said first arm into locking engagement with the ratchet wheel and which has a contact portion unconnected to but adapted to contact said pawl for actuating said pawl, thereby permitting said pawl to also pivot separate from said second arm;

h. a first normally stationary inertial device to which the first arm is attached, said inertial device comprising a plate rotatable within allowable limits about said shaft, said late supporting an inertial wheel and a second gear, said second gear adapted to engage said first gear, whereby in response to rotation of the shaft at acceleration exceeding a predetermined rate, displacement of the plate occurs, causing the arm to urge the pawl into locking engagement with the ratchet;

i. a second inertial device, movable in response to acceleration or deceleration of the vehicle to which the support is attached, which actuates the second movable arm and independently urges the pawl into locking engagement with the ratchet wheel, whereby actuation of either inertial device independently locks the shaft, preventing extension of the seat belt attached thereto.

3,858,825

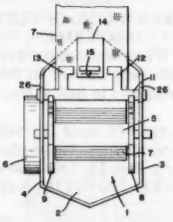
RETRACTOR FOR A SAFETY BELT ESPECIALLY FOR MOTOR VEHICLES

Per Olof Weman, Haslah, Germany, assignor to Klippan GmbH, Kohfurth, Germany

Continuation-in-part of Ser. No. 284,843, Aug. 30, 1972, abandoned. This application Sept. 19, 1973, Ser. No. 398,729

Int. Cl. A62b *35/02*

U.S. Cl. 242—107.4 11 Claims



1. A retractor device for a safety belt, comprising: a casing; a belt roller rotatably mounted in said casing, said belt roller being adapted to wind and unwind said safety belt thereon; a biasing means for said belt roller, biasing the rotation of said belt roller in the direction to wind said safety belt on said belt roller; at least one ratchet wheel being rigidly mounted on said belt roller, said ratchet wheel and said belt roller having a blocked position preventing further withdrawal of said safety belt from said belt roller and an unblocked position allowing further withdrawal of said safety belt from said belt roller; a latching means adapted to engage said ratchet wheel to block said belt roller against further withdrawal of said safety belt therefrom; a restraint means mounted in said casing, said restraint means being adapted to delay engagement of said latching means with said ratchet wheel; and a magnetic coupling between said restraint means and said latching means.

3,858,826

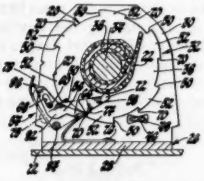
VEHICLE OCCUPANT RESTRAINT BELT RETRACTOR

Raymond G. Sprecher, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1973, Ser. No. 390,782

Int. Cl. A62b *35/02*; B65h *75/48*

U.S. Cl. 242—107.7 2 Claims



1. In a vehicle occupant restraint belt retractor including a housing, a restraint belt having an attachment portion at one end thereof, a belt reel attached to the other end of the restraint belt and mounted on the housing for rotation in belt winding and unwinding directions, and belt reel including a pair of end plates with circumferentially spaced primary locking surfaces facing in the belt unwinding direction of rotation, spring means normally biasing the reel in the winding direction to store the belt on the reel, the belt being unwound from the reel against the bias of the spring means for movement to a use position of an appropriate length where the attachment portion of the belt is attachable in a manner that belts a seated vehicle occupant, and locking means including a locking member selectively moved into engagement with a pair of the primary locking surfaces on the end plates of the belt reel so as to selectively prevent unwinding rotation of the reel with the belt in use position and to thereby restrain the belted occupant, a mechanism for preventing winding movement of the belt reel during attachment of the belt in use position, the mechanism comprising:

a plurality of circumferentially spaced secondary locking surfaces on one of the end plates of the belt reel, these secondary locking surfaces facing in the direction of belt winding movement in generally opposed relationship to the primary locking surfaces on the one end plate of the belt reel;

an elongated shaft mounted on the retractor housing in parallel relationship to the axis of belt reel rotation and in spaced relationship to the one end plate of the reel;

a pawl including a locking nose and an elongated slot receiving the shaft so as to mount the pawl on the retractor for movement between locked and unlocked positions where the locking nose is respectively positioned for engagement with or in spaced relationship to the secondary locking surfaces on the one end plate of the belt reel;

a sensing member mounted on shaft and engageable with the stored portion of the belt on the reel so as to sense the diameter thereof; and

first and second pairs of engageable surfaces carried by the pawl and the sensing member, the first pair of surfaces being engaged so as to pivot the pawl about the shaft at one end of the slot and into locked position when the sensing member senses a decrease in the diameter of stored belt as the belt is unwound for use from its fully stored condition on the reel, this movement of the pawl to locked position causing the locking nose to engage one of the secondary locking surfaces on the one end plate of the belt so as to bodily shift the pawl in a manner that moves the other end of the slot thereof into engagement with the shaft and to thereby prevent the spring bias of the reel from winding the belt thereon as the attachment portion of the belt is attached in use portion, the locking nose of the pawl disengaging the one secondary locking surface in response to a slight belt unwinding rotation of the reel as the pawl pivots about the shaft and bodily shifts with respect thereto so that the second pair of surfaces on the pawl and sensing member are engaged under the bias of gravity to locate the pawl with the shaft at an intermediate portion of the slot thereof, the first pair of surfaces of the pawl and sensing member being disengaged when the pawl is positioned with the shaft intermediate the ends of the slot so that the bias of the spring means winds the excess length of the deployed belt on the reel in a manner that snugly belts the occupant, and the sensing member sensing a return of the belt to its fully wound condition and concomitant therewith moving the second pair of surfaces on the pawl and sensing member out of engagement with each other so that gravity bodily shifts the pawl to a position where the shaft is again located at the one end of the slot and where the first pair of surfaces on the pawl and sensing member are again engaged.

3,858,827

CREEL

Allan Glassbrook, 18 Fairfields, Dumscar, off Darwen Rd., Bolton, Lancashire, England

Filed Feb. 14, 1972, Ser. No. 226,116

Int. Cl. B65h *49/02*; D02h *1/00*; D03j *5/08*

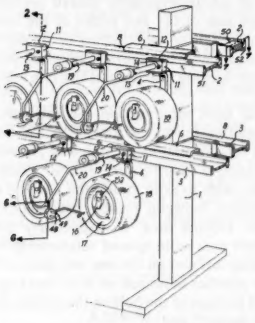
U.S. Cl. 242—131 6 Claims

1. A creel comprising:

a rigid support structure including at least one upright post; a plurality of elongated elements; clamp means mounted on the post and supporting said elements to extend horizontally thereof, each said clamp means being movable longitudinally of the post in a vertical direction; and each

said element being movable horizontally in said clamp means;

a plurality of brackets for receiving yarn-carrying bobbins, spools or self-supporting yarn packages, each said bracket being mountable on one of said elongated elements at a position spaced vertically and horizontally



from adjacent brackets and said brackets being bodily movable horizontally along said elongated elements;

and bracket clamp means including a pair of clamping jaws for locking the brackets on said element,

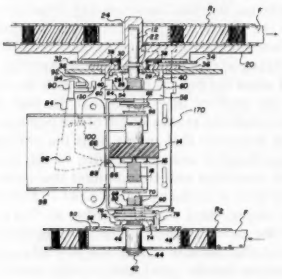
whereby the spacing of said brackets can be adjusted vertically and horizontally relative to each other.

3,858,828

DRIVE MECHANISM FOR MOTION PICTURE PROJECTOR

John J. Bundschuh, Penfield; William L. Burnham, and Kenneth W. Thomson, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 2, 1973, Ser. No. 356,699
Int. Cl. G03b *1/04*
U.S. Cl. 242—193 **10 Claims**



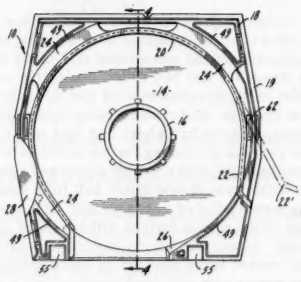
1. A drive mechanism for a motion picture projector for selectively effecting forward, reverse or rewind modes of operation, said drive mechanism comprising: an axially extending spindle shaft; drive means for rotating said spindle shaft in one direction; first support means for supporting a supply reel on said spindle shaft for operation in a first plane; second support means for supporting a take-up reel on said spindle shaft for operation in a second plane spaced from said first plane; first axially positionable clutch means movable relative to said drive means for selectively coupling said spindle shaft to said second support means for effecting a forward operational mode, said spindle shaft rotating in said one direction during said forward operational mode; second axially positionable clutch means movable relative to said drive means to a plurality of positions for selectively coupling said spindle shaft to said first support means for effecting a friction drive reverse operational mode in one position and a positive drive rewind operational mode in a different position, said spindle shaft rotating in said one direction during said reverse and rewind operational modes; and actuator means for axially positioning each of said clutch means for establishing the coupling of a particular clutch means to its appropriate support means dependent upon drive mode desired.

3,858,829

CARTRIDGE FOR A COIL OF FLEXIBLE STRIP MATERIAL

Gordon E. Bradt, Wilmette; Richard Frystak, Park Ridge; Nicholas Mischenko, and Edward R. Prelletz, both of Chicago, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 826,045, April 21, 1969,. This application Dec. 15, 1971, Ser. No. 208,331. The portion of the term of this patent subsequent to Dec. 21, 1988, has been disclaimed.
Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*
U.S. Cl. 242—197 **14 Claims**



1. In a cartridge which has a reel receptacle for receiving a coil of flexible strip material on a reel and a cover for said reel receptacle and which is adapted for use with automatic strip feed-out means, the combination comprising:

means forming an aperture in said cartridge to permit the entry of feed-out means into said cartridge and the egress of flexible strip material out of said cartridge; and

guide means extending within said cartridge from one end of said aperture annularly about the central interior of said reel receptacle to the opposite end of said aperture and positioned to penetrate the space between the flanges of the reel for maintaining the flexible strip material within the diameter of the reel flanges except in the region of said apertures, said guide means having a flexible end position to facilitate insertion of the reel into the reel receptacle and removal of the reel from the reel receptacle.

3,858,830

POSITIVE YARN FEEDING DEVICE

Jose Castillo Deniega, Elmhurst, N.Y., assignor to Wesco Industries Corp., Plainview, N.Y.

Filed Aug. 20, 1973, Ser. No. 390,124
Int. Cl. B65h *51/20*
U.S. Cl. 242—47.01 **5 Claims**

1. A yarn feeding device for positively feeding yarn to the needles of a circular knitting machine at a rate proportional to the rotation of said knitting machine comprising:

a. a base plate adapted to be affixed to a frame member,

b. a two ended tubular member secured to said base plate at one end thereof and extending perpendicularly thereto,

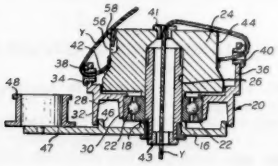
c. a storage member affixed to said tubular member adjacent the other end thereof and in spaced relation with said base plate,

d. yarn winding means mounted for rotation about said tubular member between said base plate and said storage member and adapted to be rotated at a winding velocity proportional to the rotational speed of said knitting machine,

e. said yarn winding means comprising

1. an annular element,

2. radially spaced concentric inner and outer skirt portions extending from said annular element axially toward said base plate, said inner skirt portion being mounted for rotation about said tubular member and said outer skirt portion defining a surface for engagement with movable tape means adapted to be driven at a speed proportional to the rotation of said knitting machine,



3. first and second yarn guide means extending from said annular element axially and away from said base plate and disposed in overlying relation with said storage member, said first yarn guide means being adapted to wind said yarn adjacent the end thereof nearer said base plate for forming on said storage member a plurality of yarn windings which advance in a direction away from said base plate, and said second yarn guide means being adapted to unwind said yarn from said storage member at the same angular velocity as the winding velocity,

(f) said first and second yarn guide means comprising first and second apertured ears circumferentially and axially spaced from each other.

3,858,831

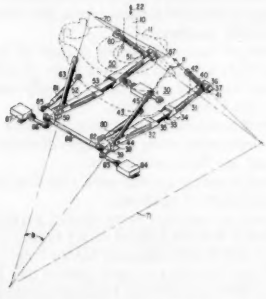
NODAL BEAM INERTIAL FLEXURE

Dennis R. Halwes, Arlington, Tex., assignor to Textron Inc., Providence, R.I.

Filed Dec. 26, 1973, Ser. No. 428,235

Int. Cl. B64c *27/04*

U.S. Cl. 244—17.27 **14 Claims**



1. In combination with a helicopter having a lift unit including a multiblade helicopter main rotor system, a nodalized module including a beam means driven in response to blade developed vertical forces and a fuselage unit connected to said beam means only at vibration nodal points along said beam, the improvement which comprises:

a. two rigid arms forming said beam extending toward one another from said nodal points,

b. a multilayered flexible beam section interconnecting said arms to accommodate beam bending in said section, and

c. a rigid member attached to each of said arms at drive points intermediate said nodal points in supporting relation from said lift unit.

3,858,832

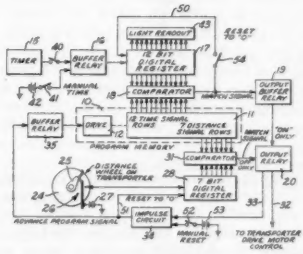
CONTROL SYSTEM FOR AIR CUSHION TRANSPORTER

Terry M. Baker, Santa Barbara, Calif., assignor to Rolair Systems, Inc., Santa Barbara, Calif.

Filed Aug. 1, 1973, Ser. No. 384,452

Int. Cl. B61l *23/16*

U.S. Cl. 246—182 R **6 Claims**



1. An automatic control for an air cushion transporter vehicle or the like having a drive motor for propelling the vehicle and a motor control for the drive motor, the improvement comprising in combination:

storage means for storing a program defining a movement sequence with time and distance steps, and providing as outputs for each step a time step signal and a distance step signal;

advance means for actuating said storage means to advance to the next steps;

a time signal source providing output pulses as a function of time;

a time register having said time signal source as an input and providing a lapsed time signal;

a time comparator having said lapsed time signal and said time step signal as inputs and providing a first match signal as an output when said inputs are matched;

an output control having an on position providing an output to the motor control for energizing the drive motor, and an off position providing an output to the motor control for denergizing the drive motor;

a distance signal source providing output pulses as a function of movement of the vehicle;

a distance register having said distance signal source as an input and providing an actual distance signal;

a distance comparator having said actual distance signal and said distance step signal as inputs and providing a second match signal as an output when said inputs are matched;

means for coupling said first match signal to said output control for switching to said on position;

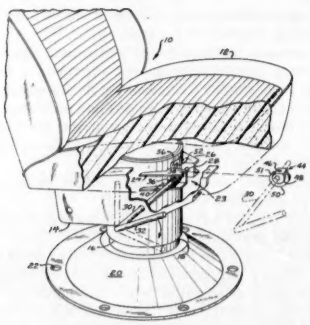
means for coupling said second match signal to said output control for switching to said off position; and

means coupling said output control to said advance means for advancing said storage means when said output control switches to said off position.

3,858,833
FISHING ROD HOLDER
Robert Fink, 6780 Tanglewood Dr., Youngstown, Ohio 44512
Filed Aug. 15, 1973, Ser. No. 388,479
Int. Cl. A01k *97/10*
U.S. Cl. 248—44 **1 Claim**

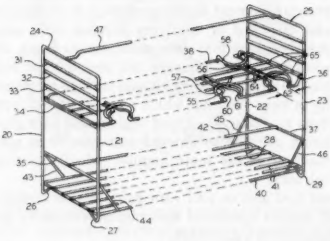
1. A fishing rod holder consisting of a Y-shaped body member, the lower portion of which is tubular and a plurality of successively smaller, inter-engaging tubular body members telescopically arranged in one another, the largest one of said inter-engaging tubular body members being telescopically engaged in said tubular portion of said Y-shaped body member, a closure on the outermost end of the smallest one of said inter-engaging tubular body members, said inter-engaging tubular body members engaging one another in frictional and sealing relation, annular grooves formed in the inner walls of each of said tubular body members and O-rings disposed therein for improving said frictional and sealing engagement.

3,858,834
LOCKING MECHANISM FOR PEDESTAL SEAT
Shawn H. Eimen, Cudahy, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Jan. 2, 1974, Ser. No. 430,318
Int. Cl. A47c *3/00*
U.S. Cl. 248—418 **4 Claims**



1. In a rotatable seat for a motor vehicle having an outer tubular member attached to the seat frame and a telescoped inner tubular member attached to a base, the improvement comprising bracket means affixed to said outer tubular member, shaft means carried by said bracket means, cam means and detent means carried by said shaft, handle means on said shaft means for rotating said shaft, cam and detent means, a first aperture means formed in said inner tube and a second aperture means formed in said outer tube, said second aperture means being larger than said first aperture means and positioned relative to said first aperture means so that when the seat is in its driving position the first aperture means is positioned centrally of the second aperture means and aligned with said detent means whereby rotation of said handle means will cause said detent means to move into or out of said first aperture means and will cause said cam means to move into or out of evertightening engagement with portions of said inner tube located immediately adjacent said first means so as to force portions of said inner and outer tubes into binding contact with each other.

3,858,835
ADJUSTABLE LABORATORY GLASSWARE FUNNEL SUPPORT
Louis Baren, Chicago, Ill., assignor to Accurate Wirecraft Company, Chicago, Ill.
Filed Mar. 28, 1973, Ser. No. 345,578
Int. Cl. B01l *9/00*
U.S. Cl. 248—94 **3 Claims**



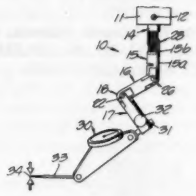
1. A funnel stand for laboratory glassware comprising a stand and shelf made of rods or wires fastened together,
plastic neoprene rubber material covering all of said stand and shelf,
said stand comprising spaced apart inverted U-shaped vertical end members with displaced horizontal stringers attached in matched pairs across the closed end of said U-shaped members,
the ends of said shelf being shaped to be supported on oppositely disposed matched pairs of said stringers,
said shelf ends and said pairs of stringers making contact in only one horizontal plane,
said shelf comprising an elongated device with first openings distributed along the length of each side of the shelf in said one horizontal plane,
a second opening coaxial with said first opening to form coaxial pairs of openings,
said pairs of openings being spaced parallel and vertically disposed to form coaxial round funnel openings,
each of said funnel openings having front slots,
one of said openings of each coaxial pair being formed by a wire having a circular bight terminating in downwardly extending leg supports attached adjacent the front slot in the other of said coaxial pair of openings, and
each pair of coaxial openings including an upper opening having a diameter which is sufficiently larger than the diameter of the lower paired openings to nestingly receive and embrace a tapered glassware device at two axially displaced circumferential positions.

3,858,836

UNIVERSALLY ADJUSTABLE CANTILEVER BRACKET

Stanley T. Marcyan, 515 W. Windsor Rd., Glendale, Calif. 91204

Filed Aug. 29, 1973, Ser. No. 392,758
Int. Cl. E05d *15/00*; G01b *3/22*; A47f *5/00*
U.S. Cl. 248—278 8 Claims



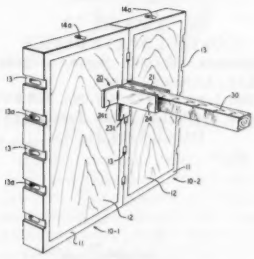
1. A self-clamping adjustable hinge assembly comprising first and second hinge members of resilient material each having a plurality of elongated wide flat-surfaced resilient fins projecting therefrom and adapted to have a snug interleaving fit and cooperating with one another to form a hinge knuckle adequate to transmit a desired load without clamping the position of said fins relative to one another, the fins on at least one of said hinge members being slightly inclined to one another and to the longitudinal axis of said one hinge member, the hinge pin means having a snug fit within aligned openings transversely of the thickness of said interleaved fins and about the axis of which said first and second members are movable through a planar arc of less than 360°.

3,858,837

CONSTRUCTION BRACKET

William C. Merritt, Valley Rd., R.D., Mansfield Township, Oxford, N.J. 07863

Filed Dec. 21, 1972, Ser. No. 317,293
Int. Cl. E04g *17/02*
U.S. Cl. 248—300 8 Claims



1. A construction bracket comprising a support structure including a support member adapted to receive and support another member,

a tongue extending from said support member and having an aperture therein,

said tongue being dimensioned to be received by a construction form in a channel having a fastener receiving opening therein,

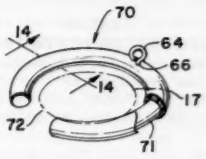
and the aperture of said tongue being pos'tioned to be aligned with the fastener receiving opening of said channel.

3,858,838

FURNITURE STOP

William E. Woodhouse, 2115 E. 61st Ave., Vancouver 16, British Columbia, Canada

Filed Mar. 29, 1973, Ser. No. 346,119
Int. Cl. A47b *95/00*
U.S. Cl. 248—345.1 2 Claims



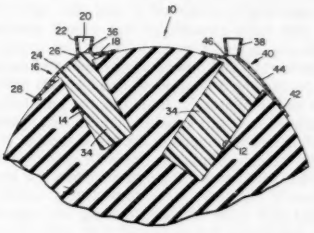
1. A furniture stop for engaging a leg of an article of furniture and limiting the movement of the furniture, comprising a leg engaging member having a surface adapted to rest on a planar surface on which the article of furniture rests, and means limiting sliding movement of said leg engaging member relative to said planar surface; said leg engaging member comprising a ring shaped rod interrupted by a gap and having at least one bore extending through said rod normal to said planar surface, said rod at least partially encompassing said leg and said means limiting sliding movement of said leg engaging member comprising a fastener extending through said bore for securing said rod to said planar surface, the upper and lower surfaces of said rod including the end portions thereof being in parallel planes.

3,858,839

APPARATUS FOR PLUGGING HOLES IN BOWLING BALLS

Grover L. Bowman, P.O. Box 84, Bayside, Calif. 95524

Continuation of Ser. No. 173,753, Aug. 23, 1971, abandoned. This application May 10, 1973, Ser. No. 359,042
Int. Cl. B22d *19/04*
U.S. Cl. 249—90 9 Claims



1. In combination: a bowling ball having a generally spherical outer surface; and a pair of cover members, each cover member having a central portion provided with a curved inner surface and a generally continuous outer peripheral, ball-engaging surface surrounding said central portion, there being an aperture through each cover member spaced from said outer peripheral surface thereof, the distance across each cover member between a pair of spaced locations on said outer peripheral surface thereof being greater than the transverse width of the corresponding finger hole and a number of times less than the diameter of the ball, each cover member being positionable on the ball so that the outer peripheral surface of the cover member is releasably attached to said spherical outer surface in surrounding proximal relationship to a respective one of the finger holes, so that when the ball is oriented with the entrances of the finger holes adjacent to the upper extremity of the ball, the inner surfaces of the cover

members will be permitted to extend upwardly and away from the spherical outer surface of the ball to form therewith respective, confined spaces communicating with respective finger holes, whereby a flowable material can be directed through respective apertures and retained within said spaces for filling the finger holes and for plugging the same when the material sets to a hardened condition.

3,858,840

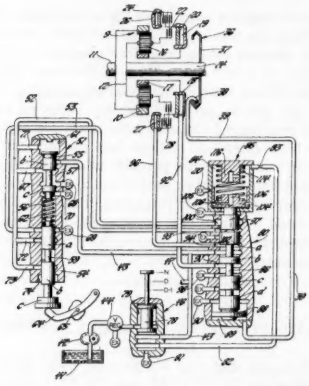
SHIFT INHIBITORS FOR POWER TRANSMISSION

Nathaniel B. Kell, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 173,087, Aug. 19, 1971, Pat. No. 3,738,198. This application Nov. 24, 1972, Ser. No. 309,081

Int. Cl. F16k *31/143*

U.S. Cl. 251—31 **2 Claims**



1. In combination, a transmission control shift valve having a shift valve element automatically movable between upshift and downshift positions, first hydraulically actuated control means operatively connected to said shift valve element for urging said valve element to said upshift position, second hydraulically actuated control means for urging said shift valve element to said downshift position, said second control means comprising a land on one end of said shift valve element, a shift inhibitor for inhibiting the longitudinal shifting movement of said shift valve element to said upshift position, said shift inhibitor comprising a housing located at one end of said shift valve, hydraulically operated piston means movably mounted in said housing forming an expansible and contractable control chamber, force transmitting means extending from said shift valve into said housing and operatively connecting said piston means to said shift valve element so that said piston means can exert a mechanical force on said shift valve element directed toward said downshift position, a source of regulated fluid pressure, a manual valve operatively connected to said source, first fluid conducting means operatively connecting said manual valve to said shift valve, second fluid conducting means operatively connecting said manual valve to said control chamber, said manual valve having a valve element movable between a first position in which fluid pressure is fed to said first fluid conducting means and is blocked from said second fluid conducting means and a second position in which fluid pressure is simultaneously fed to both of said fluid conducting means whereby said control chamber is supplied with fluid at a predetermined rate, exhaust means for bleeding fluid from said chamber at a rate lower than the fluid feed rate so that a predetermined fluid pressure is established in said chamber, and closure means directly on said piston means for completely closing said exhaust means in response to movement of said piston and said shift valve toward said downshift position so that the pressure in said chamber will increase to provide a force on said piston to rapidly move said shift valve element to said downshift position and positively prevent subsequent movement of said shift valve element from said downshift to said upshift position until said manual valve is subsequently moved to said first position.

3,858,841

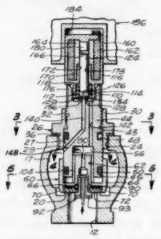
VALVE

Larry E. Haynes, 23730 Via Kannela, Valencia, Calif. 91355

Filed Mar. 8, 1973, Ser. No. 339,225

Int. Cl. F16k *31/383, 31/40*

U.S. Cl. 251—43 **4 Claims**



1. A valve construction comprising a valve body having a valve seat therein, a valve cartridge adjustably and sealingly mounted in the body and adjustable toward and away from said seat, said valve cartridge carrying a valve member movable with respect to the valve seat for opening and closing the valve and means for actuating the valve member, said valve cartridge comprising a stem having the valve member carried thereby with a pressure chamber formed between the said stem and the valve member and means for controlling the pressure within said chamber for actuating the valve member, said last means including pilot valve means, said valve member being in the form of a piston having sliding relationship with said cartridge stem so as to be guided thereby, said valve member including a guide part fitting within a bore within the cartridge stem and a sleeve part into which the cartridge stem fits.

3,858,842

CONTROL VALVE DEVICE

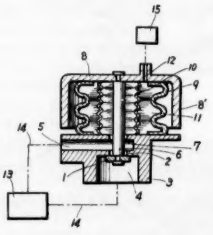
Zyunziro Yoshimura, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Aichi-ken, Japan

Filed June 7, 1973, Ser. No. 368,047

Claims priority, application Japan, June 15, 1972, 47-70850

Int. Cl. F16k *31/145*

U.S. Cl. 251—61.2 **1 Claim**



1. A control valve device for controlling the flow of exhaust gas which flows from an exhaust pipe of an engine to an intake pipe thereof, thereby to reduce harmful components of the exhaust gas emitted from the engine comprising:

a valve member having a passage therein connected with both the exhaust pipe and the intake pipe for passing the exhaust gas therethrough,

a valve seat formed in the passage,

a cup member,

a pair of inner and outer bellows which are made of stainless steel, each being fixed to the inner surface of the cup member at one end thereof and each being fixed to the valve member at the other end thereof with a preselected distance remaining between a lower skirt portion of said cup member and the valve member to restrict excessive crumpling action of said bellows,

a passage means provided in the cup member opening to a chamber enclosed by the bellows, the cup member, and the valve member for actuating the bellows according to an external pressure signal applied to the chamber therethrough,

a valve stem having one end which is fixed to said cup member, said stem being installed through the inner part of the inner bellows and guided by the valve member,

a valve body fixed to the other end of the valve stem for being seated on the valve seat by only a resilient expanding force of the bellows when the external pressure signal is not applied, whereby the flow of the exhaust gas is controlled according to the external pressure signal applied to the chamber.

3,858,843

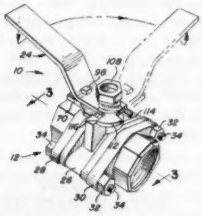
BALL VALVE AND THE LIKE HAVING LOCKING HANDLE

Leonard Joseph Hartmann, Maplewood, Mo., assignor to Chemetron Corporation, Chicago, Ill.

Continuation of Ser. No. 345,845, March 29, 1973, abandoned. This application Apr. 11, 1974, Ser. No. 460,235

Int. Cl. F16k *35/00*

U.S. Cl. 251—99 **3 Claims**



1. A valve comprising: a housing having a conduit for fluid flow and one external abutment;

a closure rotatably mounted within said housing and adapted to prevent fluid flow through said conduit when rotated to a first rotated position relative to said housing and to permit fluid flow through said conduit when rotated to a second rotated position relative to said housing; a stem operatively associated with said closure for conjoint rotation of said stem with said closure said stem having a portion extending outside said housing;

a handle having a grip portion and an end portion and being operatively associated with said stem for conjoint rotation of said handle with said stem and thus with said closure, said end portion having a first and second edges;

a plate operatively associated with said stem portion for conjoint rotation of said plate with said stem and said closure relative to said housing and connected to said handle for pivotal displacement of said handle relative to said plate about a fulcrum located between the grip and end portions of said handle and thus relative to said stem and for conjoint rotation of said handle with said plate and thus said stem and said closure, said plate having a first portion and a second portion;

means for biasing said handle toward said plate, said handle being pivotable about said fulcrum between a first pivoted position relative to said stem wherein the end portion of said handle clears said housing abutment to permit conjoint rotation of said handle with said stem and thus said closure through a range of angular displacement and a second pivoted position relative to said stem wherein, when said handle is rotated conjointly with said stem and said closure to said first rotated position of said closure relative to said housing, to prevent fluid flow, said first edge of the end portion of said handle and said first portion of said plate straddle said housing abutment to prevent conjoint rotation of said handle with said stem and said closure through said range of angular displacement to said second rotated position of said closure, and wherein, when said handle being pivoted to a first pivoted position wherein the end portion of said handle clears said housing abutment and a second pivoted position wherein said handle is rotated conjointly with said stem and thus said closure to said second rotated position of said closure, said second edge of the end portion of said handle and said second portion of said plate straddle said housing abutment to prevent conjoint rotation of said handle with said stem and said closure through said range of angular displacement to said first rotated position of said closure relative to said housing.

3,858,844

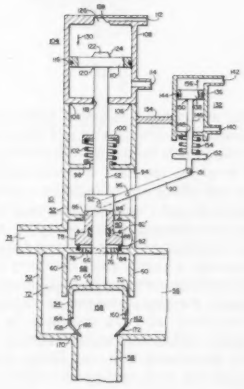
NUCLEAR TURBINE STEAM BYPASS DUMP VALVE

Ivor J. Lewis, Springfield, and Thomas H. McCloskey, Aston, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 18, 1973, Ser. No. 361,736

Int. Cl. F16k *31/383*

U.S. Cl. 251—28 **10 Claims**



1. A valve for a pressurized fluid line comprising:

a body member having an inlet port, an outlet port, and an overbalance chamber therein, said overbalance chamber having a draining orifice therein, said overbalance chamber communicating with said inlet port,

a main valve plug movable from a closed position to an open position;

means for sealing said draining orifice, said sealing means being movable from a closed position to an open position, said sealing means being closed while said main valve plug is closed, said sealing means in the closed position permitting the pressure of the influent fluid to increase to a predetermined value within said over-balance chamber;

first bias means for moving said main valve plug to the

closed position, said first bias means cooperating with said pressurized fluid in said overbalance chamber to hold said main valve plug closed;

second bias means for biasing said main valve plug toward the open position;

means for controlling said first bias means and said sealing means, said control means opening said sealing means to drain said overbalance chamber, said control means releasing said first bias means substantially coincident with the opening of said sealing means, the draining of said overbalance chamber and the release of said first bias means permitting the second bias means to open said main valve plug.

3,858,845

MANUALLY OPERABLE LIFTING APPARATUS

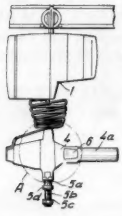
Hugo Grote, Wette, and Ludolf Peithmann, Hagen, both of Germany

Filed Mar. 20, 1973, Ser. No. 342,935

Claims priority, application Germany, Mar. 24, 1972, 2214530

Int. Cl. B66d *1/28*

U.S. Cl. 254—168 **5 Claims**



1. Lifting apparatus comprising a lifting means, a load receiving member associated with said lifting means, and manually operable switch means for controlling the movement of said load receiving member, wherein the improvement comprises that said lifting means includes a lifting device, a lifting rope secured to and extending downwardly from said lifting device, a connecting member attached to the end of said lifting rope depending from said lifting device, said connecting member includes a handle and a fastening fixture for attaching said load receiving member to said connecting member and said fastening member arranged to engage differently constructed said load receiving members for handling different types of loads, said switch means mounted on said handle and operatively associated with said lifting device for operating said lifting device while said handle affords manipulation of a load held by said receiving member, said connecting member has a groove therein with an opening from the exterior surface of the connecting member, said groove having a widened portion at its inner end as compared to the width of the portion thereof located at the opening from said groove on the exterior surface of the connecting member, said groove arranged to receive and hold said fastening fixture, a sliding lock arranged for securing said fastening fixture within said groove in said connecting member, said sliding lock comprises a bolt member mounted in the end of said fastening fixture which is inserted into said groove in said contacting member, a spring biasing said bolt member in the direction of the inner end of said groove, and said connecting member having a recess in the inner end of said groove for receiving said spring biased bolt member and preventing said fastening fixture from sliding out of said groove.

3,858,846

DEVICE FOR CONNECTING AND HOLDING THE ROD FITTINGS IN TWO FINISHED CONCRETE PARTS, OR THE LIKE

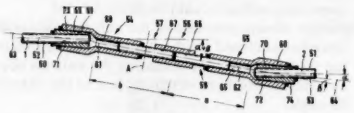
Josef Schmid, Liebnizstrabe 18, 8900 Augsburg 22, Germany

Filed Feb. 1, 1973, Ser. No. 328,518

Claims priority, application Germany, Feb. 8, 1972, 2205772

Int. Cl. B66f *3/10*

U.S. Cl. 254—29 A **5 Claims**



1. A device for connecting and stressing rod ends projecting from opposed fixed supports comprising, in combination:

a connecting rod assembly including a pair of connecting rod elements arranged end-to-end,

sleeve means connecting the rod elements together and operable upon relative rotation between the sleeve means and the rod elements to vary the overall effective length of the assembly,

swivel joints at opposite ends of the connecting rod assembly, and

each joint being connected to one of the projecting rod ends with its center of swivel movement aligned with the axis of the projecting rod end,

the swivel joints including outer sleeves are threadedly connecting the opposite ends of the connecting rod assembly in coaxial alignment and project therebeyond, threaded bores in the projecting ends of the outer sleeves having bore axes angularly intersecting the axis of the connecting rod assembly, and

the swivel joints further comprising an intermediate externally threaded sleeve screw--engaged within the projecting end of each outer sleeve, each intermediate sleeve having an internally threaded bore whose axis is inclined to but intersects the axis of its external threads and said bore being threadly connected to external threads on the adjacent projecting rod end.

3,858,847

DOUBLE CHAIN JACK

Henry B. Chambers, Santa Inez, Calif., assignor to Hydranautics, Santa Barbara, Calif.

Filed June 13, 1972, Ser. No. 369,517

Int. Cl. B66f *1/08*

U.S. Cl. 254—108 **4 Claims**

1. A chain jack having a chain, a pair of latch plates having latches for selectively engaging and disengaging the links of said chain, means for moving the said latch plates repetitively from and toward each other, and means for actuating said latches in and out of engagement with the links of said chain, in which the improvement comprises:

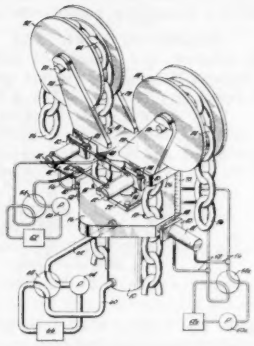
a. a single ram connected to a piston in a hydraulic cylinder;

b. a latch plate attached to the head of said ram and a latch plate attached to said hydraulic cylinder, said latch plates each having two cruciform apertures, one on each of opposite sides of said ram, the cruciform apertures in the said ram head latch plate being vertically aligned with the corresponding cruciform apertures in the said cylinder latch plate;

c. two chains passing through said cruciform apertures, one on each of opposite sides of said ram;

d. two pairs of parallel spaced apart latch pins slidably mounted in horizontal holes in each of said latch plates, a pair on each of opposite sides of said ram and in the way of said cruciform apertures for selectively engaging and

disengaging said chains passing through said cruciform apertures; and



e. means for repetitively extending and retracting said ram in said hydraulic cylinder and means for engaging and disengaging said latch pins from said chains to cause lifting and lowering of said chains.

3,858,848
FISH TAPE

Robert H. MacFetrich, Charlotte, N.C., assignor to Jet Line Products, Inc., Matthew, N.C.

Filed Apr. 26, 1973, Ser. No. 354,805
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3 FT **4 Claims**

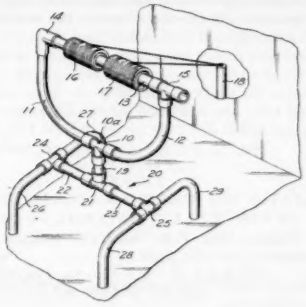
1. A fish tape of the character described comprising an elongated cylindrical body consisting of a central longitudinal core of continuous fibers of high strength artificial resin, a tubular sheath of polyethylene plastic extruded upon and embracing said core, an eye of insulating material having screw threads by which it is removably mounted upon one end of said body, and a loop at the other end of the body formed by bending the free end portion of the body back upon and parallel to an adjacent portion of the body, a metallic binding sleeve crimped upon the free end portion and the adjacent parallel portion of the body and a heat shrinkable plastic sleeve of insulation embracing the free end and parallel portions of the body and the metallic binding sleeve which holds the end portion to the main portion of the body.

3,858,849
PULL LINE FEEDER

Benjamin F. Peirce, Jr., 1040 S.W. 67th Ter., Plantation, Fla. 33317

Filed Feb. 19, 1974, Ser. No. 443,295
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3 R **6 Claims**

1. A line feeder for feeding one or more flexible lines into a wiring conduit comprising a generally U-shaped support having a fitting at the bottom and a pair of spaced apart arms extending up from said fitting on opposite sides, and a cross bar extending substantially horizontally between the upper ends of said arms, said support having an opening therein and a passage extending from said opening adapted to pass one or

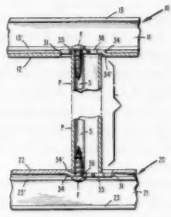


more flexible lines unwound from corresponding supply rolls on said cross bar.

3,858,850
ADJUSTABLE PICKET RAIL ASSEMBLY FOR STAIRWAYS

Frederic R. Maxcy, Ellicott City, and George A. Glass, Baltimore, both of Md., assignors to W-T Industries, Inc., Baltimore, Md.

Filed Aug. 21, 1973, Ser. No. 390,230
Int. Cl. E04h *17/16*
U.S. Cl. 256—22 **15 Claims**



1. An adjustable rail assembly for a stairway comprising spaced upper and lower picket rails disposed at an angle to the horizontal with spaced hollow vertical pickets extending therebetween,

a. said picket rails being formed of channelled sections of extruded material with the respective central webs thereof facing each other,

b. a plurality of tabs stamped and broached from the central web of the upper rail spaced from each other and each readily deformable from the plane of said web along an axis substantially perpendicular to the longitudinal axis of the rail at a level higher than the cut at the free edge of the respective tab,

c. each of said tabs having an opening therein,

d. a plurality of tabs stamped and broached from the central web of the lower rail spaced from each other corresponding to the spacings of the tabs in the upper rail, and in the opposite direction, and each readily deformable from the plane of said lower web along an axis substantially perpendicular to the longitudinal axis of the rail at a level lower than the cut at the free edge of the respective tab,

e. each of said last-mentioned tabs having an opening therein,

f. said spaced vertical pickets formed from predetermined lengths of hollow extruded material formed with an inte-

gral screw boss as an integral part of an interior wall surface and adapted for aligment with said openings,

g. self-engaging threaded screw fasteners extending through said openings in said tabs into penetrating threaded engagement with the screw boss at the ends of the hollow pickets adjacent to each tab, and

h. said tabs readily bent from the planes of the respective webs at angles corresponding substantially to the inclination of the stairway relative to the horizontal, to dispose said tabs and end portions of said pickets within said picket rails.

3,858,851

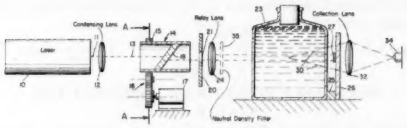
APPARATUS FOR PROVIDING A STATISTICAL COUNT OF PARTICULATE MATERIAL IN A FLUID

Hugh Malcolm Ogle, Palo Alto, Calif., assignor to Prototron Associates, Palo Alto, Calif.

Filed July 5, 1973, Ser. No. 376,281

Int. Cl. G01n *15/00*

U.S. Cl. 356—102 **14 Claims**



1. A liquid inspection apparatus adapted to provide a measure of particulate material in a sample volume, said particulate material being suspended in a liquid contained within a sealed transparent container, said liquid inspection apparatus comprising:

a. means for generating a well-defined beam of light;

b. means for directing said well-defined beam of light through said container;

c. means for scanning said beam of light over no less than one path located entirely within a confined area transverse to the direction of said beam of light, thereby to sequentially illuminate particulate material in the portion of said liquid traversed by said beam whereby bursts of light are scattered therefrom;

d. means for detecting bursts of light scattered from particulate material along a selected portion of said beam within said container thereby to produce a sequence of electrical signals; and

e. means responsive to said electrical signals occurring within a selected interval of time for providing a measure of particulate material within said sample volume.

3,858,852

MACHINE FOR INTERMITTENTLY FILLING MOULDS OR CAVITIES WITH A REACTIVE PLASTICS-FORMING, MORE PARTICULARLY FOAM-FORMING MIXTURE

Karl Breer, Koeln, and Klaus Nadolski, Bergisch-Neukirchen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

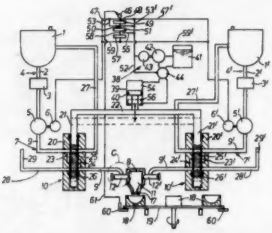
Filed Feb. 12, 1973, Ser. No. 331,402

Claims priority, application Germany, Feb. 26, 1972, 2209168

Int. Cl. B01f *15/04*

U.S. Cl. 259—4 **12 Claims**

1. A machine for intermittently filling moulds or cavities with a mixture of at least two free-flowing components, the machine comprising a mixing head for mixing the components and having inlets for the components, shut-off members for closing of the inlets, and an outlet for discharging the mixture, the machine further comprising a supply system for supplying the components to the mixing head, the supply system comprising a suction side system for each component, each suction side system comprising a pump, and a pressure side pipe system for each component, each pressure side system comprising a pipe section leading from the pump for its component through control slides to the mixing head, the control slides being coupled with one another and provided with guide channels which are adapted to connect the pumps with the mixing head in a throughflow position, the guide channels



interrupting the pipe systems in an interrupt position, the control slides comprising additional guide channels which, in the interrupt position, connect with the pipe sections between the control slides and the shut-off members of the mixing head, and pressure relief systems which connect with said additional guide channels when the control slides are in the interrupt position.

3,858,853

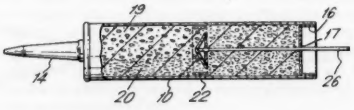
CONTAINER WITH MIXER AND METHOD OF USE

Paul Gilger Rausch, 8405 Wainstead Dr., Parma, Ohio 44129, and Walter Donald Todish, 5379 Rustic Hills, Medina, Ohio 44256

Filed May 25, 1973, Ser. No. 363,911

Int. Cl. B01f *7/00*

U.S. Cl. 259—40 **5 Claims**



1. A disposable, container for dispensing doses of a self setting mix, comprising a container having a rigid tubular body, a self setting mix having first and second components longitudinally disposed within said body, said components forming a polymerised layer along their interface, said body having a first end wall forming an integral spout and a second end having a detachable cap thereon, and including an opening therein covered by a removable adhesive strip, said cap serving to seal said components within said container, and mixing means for movement through said body for mixing the two components to form said mix, said detachable cap arranged for movement through said body and serving as expulsion means to expel the mix from the container, said mixing means and said expulsion means being movable independently of said other, said mixing means comprising a mixing blade adapted for disposition within said body and a mixing rod, the opening in said cap being dimensioned to receive the mixing rod therethrough after said adhesive strip has been removed, said blade being movable through said body by said rod toward said spout to mix the components and once said components are mixed for remaining passive within said body adjacent said first end wall, said blade being detachable from the rod to enable the rod to be removed from the container with the blade remaining passive in the body adjacent said first end wall, said cap being temporarily detachable from said second end to enable the blade to be inserted in the body, and being arranged for reconnection to said second end once said blade

is in place within said body, said cap being thereafter movable longitudinally through the body to effect the expulsion of the mix through the spout.

3,858,854
ENZYMATIC DETERGENT

Maung Hla Win, 536 Snyder Ave., Berkeley Heights, N.J. 07922; Walter Anthony De Salvo, 237 Prospect Ave., North Arlington, N.J. 07032, and Edward Joseph Kenney, 42 Stevens St., Bernardsville, N.J. 07924

Continuation of Ser. No. 98,111, Dec. 14, 1970, abandoned, which is a continuation-in-part of Ser. No. 883,955, Dec. 10, 1969, abandoned. This application Apr. 3, 1973, Ser. No. 347,534
Int. Cl. C11d *7/42*
U.S. Cl. 252—89 **11 Claims**

1. A detergent composition consisting essentially of a mixture of

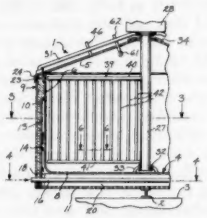
a. a major proportion of a granular water-soluble detergent selected from the group consisting of anionic, nonionic, and amphoteric detergents, built with a water-soluble salt selected from the group consisting of organic and inorganic builder salts, the concentrations of the detergent and the builder salt being in the ranges of 0.2 to 70% and 30 to 99.8%, respectively, based on the weight of the built granular detergent, and

b. a minor proportion of a free-flowing substantially dust-free mass of substantially spherical beads consisting essentially of a water dispersible solid, fusible, substantially anhydrous, nonionic detergent binder having a melting point up to about 60°C., having dispersed therein an enzyme concentrate consisting essentially of a proteolytic enzyme, said binder having a hydrophilic polyethylene oxide chain of 6 to 84 ethylene oxide units, the concentration of the proteolytic enzyme in the beads being sufficient so that the beads contain about 0.1 to 5 Anson units per gram, with substantially all of said beads passing through a 10 mesh U.S. Standard Sieve Series screen and at most 14.9% of said beads passing through a 100 mesh U.S. Standard Sieve Series screen.

3,858,855
FOOD PROCESSING VAT

Gretz L. Hazen, Fort Atkinson, Wis., assignor to DEC International, Inc., Madison, Wis.

Filed Nov. 17, 1972, Ser. No. 307,379
Int. Cl. B01f *7/32*
U.S. Cl. 259—104 **13 Claims**

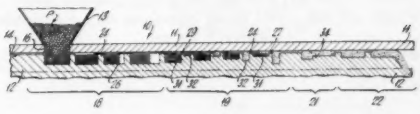


8. A vat for processing a product comprising a vessel to contain the product, a vertical shaft disposed within the vessel, a frame connected to the shaft and extending outwardly from the shaft, reversible drive means for rotating the shaft, implement means carried by the frame, said implement means arranged so that when the shaft is rotated in one direction the implement means acts to stir the product and when the shaft is rotated in the opposite direction, the implement means acts to slice the product, and second implement means carried by the frame and located adjacent the bottom of the vessel, said second implement means comprising a series of blade members pivotally connected along an edge to said frame and disposed to slice the product when the shaft is rotated in said opposite direction and disposed to freely pivot relative to the frame when the shaft is rotated in said first direction.

3,858,856
EXTRUDER SCREW

John S. Hsu, 101 Ivy Ln., Somerville, N.J. 08876

Filed Jan. 26, 1973, Ser. No. 327,001
Int. Cl. B01f *7/02*
U.S. Cl. 259—191 **2 Claims**

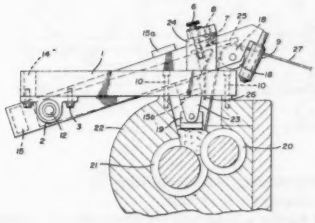


1. An extruder screw adapated to be mounted in the barrel of an extruder apparatus, said screw comprising a solids transport section along an end length of said screw and a melt transport section along an intermediate length of said screw, said solids transport section including a helical thread defining a main flight of a predetermined constant lead to form a solids feed channel, said melt transport section having a helical thread defining a main flight of substantially the same lead as said main flight of said solids transport section, and a second helical thread defining a barrier flight lengthwise spaced from said main flight to form a melt channel separate from said solids feeds channel, said main flight in said melt transport section being initiated at a point displaced from the end of the main flight in said solids transport section, and said barrier flight being a continuation of said main flight in said solids transport section, said melt channel having a root diameter tapering downwardly from the end of said solids transport section, and said solids feed channel having a root diameter tapering reversely from the root diamter taper of said melt channel.

3,858,857
FEED CONTROL MECHANISM

Ernest S. Ulm, Stow, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed May 29, 1973, Ser. No. 364,819
Int. Cl. B29f *3/02*
U.S. Cl. 259—191 **5 Claims**



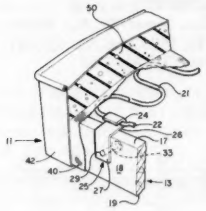
1. Feed control mechanism for plastic material which comprises pressure exerting means to exert pressure on an incoming strip of material, pressure sensing means disposed to be subjected to pressure from buildup of material and pressure transfer means to transfer pressure to said pressure exerting means in response to the pressure sensed.

3,858,858

ANCHOR BRACKET FOR FURNITURE SPRINGS

George E. Higbea, 1405 N. Scott St., Napoleon, Ohio 43545

Filed Mar. 23, 1973, Ser. No. 344,272
Int. Cl. F16f *3/02*
U.S. Cl. 267—110 4 Claims



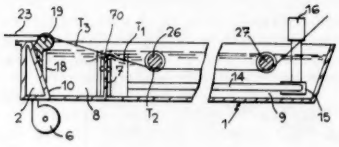
1. An anchor bracket for anchoring a replacement zigzag spring onto spaced parallel frame members of an assembled article of furniture such as a chair without removal of outer decorating fabric, padding or disassembly of the chair, said frame members each including facing inner surfaces, an upper edge and exterior surfaces normally covered with decorative fabric, said bracket including a first leg for abutting the exterior surface of said frame but inside said decorative fabric, a connected second leg extending across the upper edge towards said inner surface and zigzag spring engaging means formed in said second leg, said first leg having a threaded transverse hole in which the threads are characterized by a pitch as to be engaged by threads of a machine screw entering the hole from the direction of the interface of said leg and said exterior surface of said frame member, said directing corresponding to that proceeding from the inside of said chair.

3,858,859

PROCESS AND TANK FOR THE PATENTING OF METAL WIRES

Paul Baguet, Brussels, Belgium, assignor to Compagnie D'Etudes et de Participations Industrielles, Grand Duchy Luxembourg, Luxembourg

Filed Jan. 5, 1973, Ser. No. 321,414
Claims priority, application Luxembourg, Jan. 6, 1972, 64560
Int. Cl. C21d *9/64*
U.S. Cl. 266—3 R 6 Claims



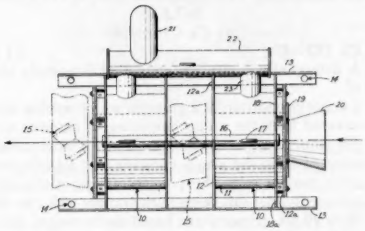
1. A wire patenting tank comprising:
a tank containing a lead bath;
said tank having a head portion positioned at a location in the tank at which a hot wire enters the tank;
a partition means for separating said head portion from a second portion of the tank;
a lead pump positioned in the second portion of said tank near a side thereof from which a patented wire leaves the tank; and,
means for conveying a lead effluent of said pump into the head portion of said tank.

3,858,860

PIPE QUENCH HEAD

George W. Randall, Coraopolis, Pa., assignor to Armco Steel Corporation, Butler County, Ohio

Continuation of Ser. No. 231,155, March 2, 1972,. This application Nov. 8, 1973, Ser. No. 414,159
Int. Cl. C21d *9/08*
U.S. Cl. 266—6 S 11 Claims



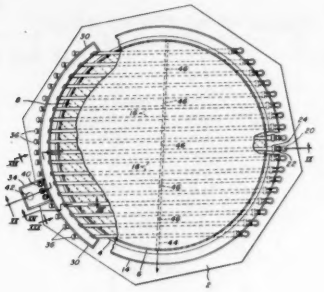
1. A quench head comprising: an outer shell (**10**) having a cylindrical housing (**11**) and a pair of flanges (**12**) extending at least inwardly of the periphery of said housing, a first of said flanges being located at one end of said housing and a second of said flanges being located at the other end of said housing, that portion of said first flange which extends inwardly of said housing forming a first abutment means and having a centrally located first opening therein, that portion of said second flange which extends inwardly of said housing forming at least a part of a second abutment means and having a centrally located second opening therein, said second opening being larger than said first opening; and a plurality of interchangeable inner shells (**24**), each of said inner shells having a cylindrical housing conduit (**25**) and a pair of flanges (**26, 27**) extending outwardly from the periphery of said conduit, a first (**27**) of said conduit flanges being located at one end of said conduit and being of such size as to be able to pass through said second opening and abut said first abutment means, the second (**26**) of said conduit flanges being located at the other end of said conduit and being of such size as to abut said second abutment means when said first conduit flange abuts said first abutment means, said conduit having a plurality of nozzle means (**28 – 30**) extending therethrough and projecting inwardly thereof, said cylindrical housing conduits different from each other only in diameter and the outer diameters of said first and second conduit flanges of all of said cylindrical housing conduits being the same; first gasket means (**34**) between said first conduit flange and said first abutment means, and second gasket means (**36**) between said second conduit flange and said second abutment means, there being a plenum chamber (**43**) defined by the outer wall of said conduit, the inner wall of said outer shell, and said conduit flanges and said abutment means; clamp means (**37, 42**) for releasably clamping said inner, spool-like shell to said outer shell; and entrance means (**23**) for admitting a supply of coolant to said plenum chamber; said conduit extending between said first and said second openings; whereby an inner shell may be selected from said plurality of interchangeable inner shells in accordance with the diameter size of the cylindrical housing conduit desired.

3,858,861

UNDERHEARTH COOLING SYSTEM

James A. Jernigan, Upper Saint Clair Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 17, 1974, Ser. No. 434,159
Int. Cl. C21b 7/10
U.S. Cl. 266—32 3 Claims



1. An underhearth cooling system for a blast furnace having a shell surrounding the hearth refractories comprising

a plurality of cooling tubes passing through the shell and the lower hearth refractories,

a cooling water inlet trough located above the cooling tube inlet ends,

a discharge line for each cooling tube connecting the bottom of the cooling water inlet trough to the cooling tube inlet end,

an expansion joint in each discharge line,

a control valve in each discharge line,

a stuffing box surrounding each cooling tube at one location where the cooling tube passes through the shell, and

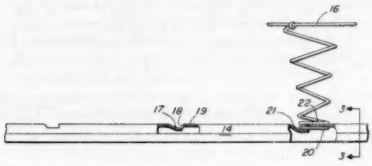
a water collection trough connected to the cooling tube outlet ends.

3,858,862

SPRING AND SLAT ASSEMBLY

Fred A. Ciampa; Angelo Serafini, both of E. Boston, and Louis Mazzarella, Boston, all of Mass., assignors to Standard Box Spring Company, East Boston, Mass.

Filed Aug. 6, 1973, Ser. No. 386,051
Int. Cl. A47c 23/02, 23/04
U.S. Cl. 267—100 8 Claims



1. A slat-spring assembly which comprises:

at least one compression spring having a lower convolution of predetermined height and width;

a slat having an upper surface and a parallel lower surface, said slat being formed with a recess portion and a lip portion defining a slot therebetween, said recess portion extending downwardly from said upper surface and terminating below said lower surface and being spaced apart therefrom, at least a portion of the surface of said recess portion which adjoins said upper surface being inclined thereto;

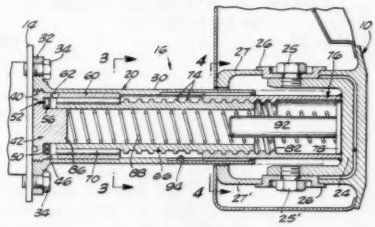
said slot having a cross-sectional height and width sufficient to receive said lower convolution of said spring by a translatory movement thereof accompanied by elastic deformation of said lower convolution, said inclined surface portion interfering with removal of said lower convolution in a relaxed, undistorted condition from said slot.

3,858,863

ROTARY TYPE ENERGY ABSORBER WITH AXIAL DRIVE AND AUTOMATIC RESETTING CAPABILITY

Bernard Mazelsky, West Covina, Calif., assignor to Ara, Inc., West Covine, Calif.

Continuation-in-part of Ser. No. 141,128, May 7, 1971, abandoned. This application Dec. 1, 1972, Ser. No. 311,297
Int. Cl. F16f 7/08
U.S. Cl. 267—139 9 Claims



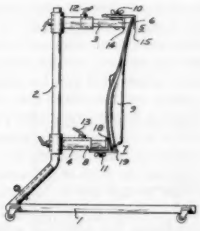
1. In combination, a rotary type energy absorber comprising: inner and outer cylindrical members having energy dissipating elements between them and adapted to dissipate energy by cyclic plastic deformation; means adapting the energy absorber to absorb the energy of linear forces, said means comprising an axially linearly movable force receiving element having a direction coincident with said axis; and means whereby said axially linear movement imparts rotational movement to one of said members for absorbing energy.

3,858,864

VEHICLE DOOR SUPPORTING APPARATUS

Carl E. Waldow, Sanford, Fla., assignor to The Raymond Lee Organization, New York, N.Y., a part interest

Filed Mar. 7, 1973, Ser. No. 338,675
Int. Cl. B25b 11/00
U.S. Cl. 269—17 4 Claims



1. Door supporting apparatus for supporting a door of a vehicle in a desired position, said apparatus comprising

a movably dolly base;

a base-support member comprising a substantially tubular member affixed to the base and extending at an angle with the base;

an angular member rotatably mounted in the base support member on the base in a manner whereby it is at substantially right angles to the base in one position and substantially parallel to the base in another position;

a pair of spaced substantially parallel arms movably independently mounted on the angular member in a manner whereby the arms are selectively spaced a desired distance from each other and are substantially parallel to the base in the one position of the angular member and at substantially right angles to the base in the other position of the angular member; and

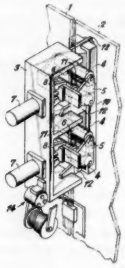
clamping means at the free ends of the arms for holding the door of a vehicle on the inside or the outside to permit removal of the door from the vehicle, work on the door and remounting of the door on the vehicle.

3,858,865

APPARATUS FOR ALIGNING WELDING JOINTS

Kazuo Maeda, Chiba, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Chuoku, Tokyo, Japan

Filed Feb. 23, 1973, Ser. No. 335,249
Int. Cl. B23k *37/04*
U.S. Cl. 269—25 **2 Claims**



1. Apparatus for aligning edges of plates spaced apart edgewise by a gap and having non-aligned portions, comprising:

a frame having a front portion adapted to be disposed on one side of said plates and a rear portion adapted to be disposed on the other side of said plates;

means including a pair of connecting elements adapted to extend through said gap for rigidly connecting together said front and rear portions of said frame;

a roller assembly associated with the front portion of said frame, said roller assembly including a pair of rollers mounted in spaced relation to the direction of movement of said frame and adapted to span across said gap for engaging edge margins of said plates on said one side;

at least one roller associated with said pair of rollers and carried by the rear portion of said frame, said one roller adapted to span across said gap for engaging edge margins of said plates on the other side thereof, said one roller being located intermediate said pair of rollers;

expansible-chamber actuator means mounting said roller assembly in said front frame portion for adjustable movement transversely to the path of movement of said frame; said front portion of said frame overlying said roller assembly and said actuator means being connected to said overlying front frame for applying substantial pressure between said overlaying front frame and said roller assembly to cause said front portion of said frame to cooperate with said connecting elements to cause said rollers to apply an edge-reforming pressure against opposite sides of said plates;

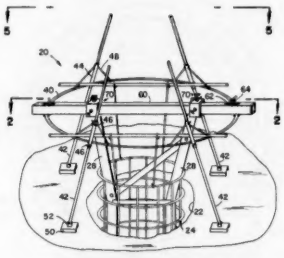
whereby movement of the frame in a path along the gap causes non-aligned portions of the plate edges to be bent about the rollers into alignment with one another.

3,858,866

ADJUSTABLE TEMPLATE FOR SUPPORTING AND ALIGNING TOWER FOOTINGS

Ernie R. Armstrong, 7570 Kentwood Ct., Gilroy, Calif. 95020, and Laurence H. Wood, 721 Shannon Hills Dr., Paso Robles, both of Calif. 93446

Filed Mar. 6, 1973, Ser. No. 338,444
Int. Cl. B22d *19/02*
U.S. Cl. 269—46 **14 Claims**



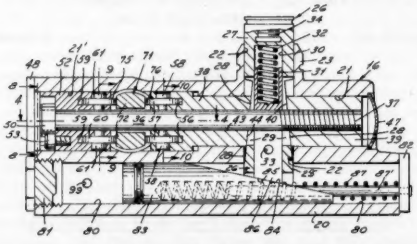
1. A template for suspending material at a required position and orientation with respect to a work point, said template comprising, a horizontal circular ring, a plurality of support legs, leg connecting means for connecting the legs to the ring, material holder means for suspending material from the ring, said material holder means including a cross-member having end portions engagable with the top of the circular ring for support by the circular ring, cross-member connecting means for clamping the ends of the cross-member to the circular ring, and wherein the cross-member connecting means are movable about the circumference of the circular ring to permit angular adjustment of the cross-member within the plane of the circular ring.

3,858,867

AUTOMATIC FLUID OPERATED SPRING LOADED JACK LOCK ASSEMBLY

Dean A. Claycomb, 3921 W. Townhall Rd., Traverse City, Mich. 49684

Filed Aug. 10, 1973, Ser. No. 387,484
Int. Cl. B23q *3/10*
U.S. Cl. 269—27 **15 Claims**



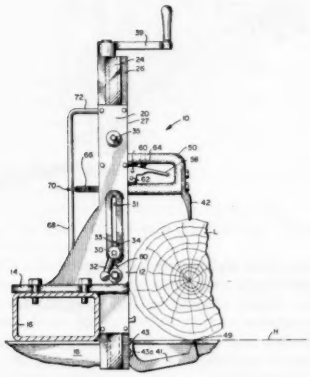
1. A work supporting device having a body provided with a pair of intersecting bores, a plunger slidable in one of said bores for engagement with a workpiece to sustain said piece rigidly, a locking device movable in the other bore to engage said plunger laterally from opposite sides and hold the latter in a workpiece-sustaining position, and means other than said locking device movable laterally to support said plunger rigidly in said workpiece-sustaining position, said means comprising a wedge operable to engage and rigidly support and sustain said plunger in said workpiece-sustaining position, said locking device being operated for movement in said other

body bore by a cam and follower unit, said wedge being fluid pressure-operated for said plunger-sustaining engagement.

3,858,868
SELF-CENTERING SAWMILL DOG

Stanley Zagray, Colchester, Conn., assignor to William Zagray; Harry Zagray and Stanley Zagray, all of Colchester, Conn.

Filed Dec. 10, 1973, Ser. No. 423,003
Int. Cl. B23q *1/08*
U.S. Cl. 269—54.2 **10 Claims**



1. A self-centering sawmill dog assembly having a frame rigidly mountable on a log-positioning structure for feeding a log to the saw along a fixed rectilinear path and comprising

a slide member mounted on said frame for movement relative thereto in a direction perpendicular to the path of said positioning structure,

a screw-spindle rotatably supported on said slide member for rotation about its longitudinal axis and mounted against longitudinal movement relative to said slide member, the longitudinal axis of said screwspindle being disposed parallel to the direction of movement of said slide member,

a sleeve member mounted on said slide member with said screw-spindle extending co-axially through it, said sleeve member having an elongated slot extending parallel with said screw-spindle for access thereto,

first gripping tooth-means mounted on said slide member for movement therewith,

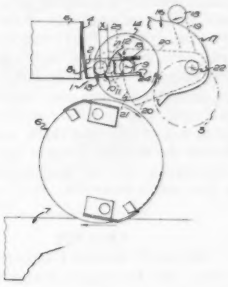
second gripping tooth-means supported on said sleeve member for movement longitudinally thereof and having a screw-engaging element extending through said access slot into meshing engagement with said screw-spindle, such that rotation of said screw-spindle moves said second gripping tooth-means longitudinally of said sleeve member toward and away from said first gripping tooth-means, and

means for rotating said screw-spindle such that upon rotation thereof in one direction when said second gripping tooth-means is in engagement with a log said slide member is moved on said frame in the direction of said first gripping tooth-means, whereupon continued rotation of said screw-spindle in the same direction causes said gripping tooth-means to bite with equal force in opposite directions into clamping engagement with the log.

3,858,869
APPARATUS FOR SERIALLY REMOVING LABELS FROM A STACK

Peter Graham Campbell, and David Arthur Buxton, both of Sheffield, England, assignors to Morgan Fairest Limited, Sheffield, England

Filed Jan. 19, 1973, Ser. No. 325,001
Claims priority, application Great Britain, Jan. 26, 1972, 3603/72
Int. Cl. B65h *7/00*
U.S. Cl. 271—33 **9 Claims**

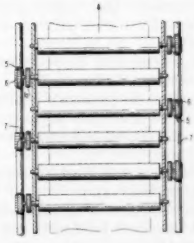


9. A pick-out device for a labelling machine comprising a pick-out blade rotatable about a first axis in one direction, a crankshaft rotatable about a second parallel axis, removed from said first axis in the opposite direction or in the same direction and connected to said pick-out blade and capable of imparting to said pick-out blade not only rotational movement about said second axis but also radial movement outwardly or inwardly with respect to said first axis, means to guide said pick-out blade radially and means to apply gum to said pick-out blade; whereby said blade picks out the foremost label of a stack of labels without rolling over said foremost label, wherein a pick-out blade carrier carries said pick-out blade and an end of said carrier remote from said blade is slotted to receive a central drive shaft which is coincident with said first axis.

3,858,870
ROLLER DRIVING SYSTEM FOR FEEDING SHEET MATERIALS

Shinichi Yabe, and Masayuki Kamada, both of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

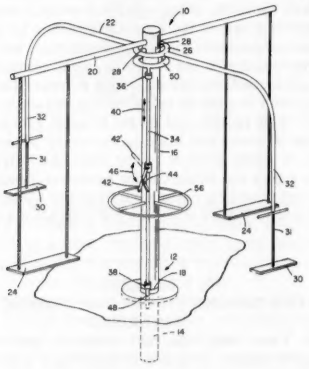
Filed Oct. 11, 1972, Ser. No. 296,696
Claims priority, application Japan, Oct. 11, 1971, 46-79980
Int. Cl. B65h *5/06*
U.S. Cl. 271—272 **2 Claims**



1. In a roller driving system for feeding sheet materials comprising: a plurality of roller pair units in series, each roller pair unit comprising rollers on opposite sides of said sheet

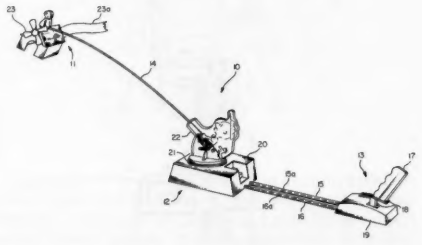
material, rotating in opposite directions with reference to each other and frictionally driving said sheet material by nipping said sheet material between the two rollers of said roller pair units to pass said sheet material from roller pair unit to roller pair unit, the improvement comprising: each of said roller pair units being driven from one side only with each roller of said roller pair units carrying a gear to the same side thereof and in mesh with one another with one roller of a given roller pair unit driven by the other, the axes of said rollers for each roller pair unit defining a plane which is at right angles to the plane of sheet material moving between the rollers of the roller pair units, drive shafts extending along the direction in which the sheet materials are fed on each side of the roller pair units, gears carried by said drive shafts at locations corresponding to given roller pair units and in mesh with a gear carried by one of said rollers for each roller pair unit, the improvement wherein: each of said roller pair units is driven from one side only, and said roller pair units are driven alternately from opposite sides by way of said drive shafts and the gears carried thereby such that the nipping pressure applied to said sheet material as it progresses through said system from roller pair unit to roller pair unit is balanced.

3,858,871
MULTI-PURPOSE CAROUSEL
Lewis L. Bourne, 1101 Kellogg St., Suisun City, Calif. 94585
Filed May 28, 1974, Ser. No. 474,111
Int. Cl. A63g *1/32*
U.S. Cl. 272—30 **7 Claims**



1. A multi-purpose carousel comprising:
a center post having a lower non-rotatable portion mountable to the ground and an upper portion selectively axially rotatable with respect to the lower portion;
a first cross member rigidly attached at its center to the upper portion of the post adjacent the top end of said post;
a pair of swings depending from the opposite ends of the first cross member;
a second cross member pivotably attached at its center to the upper portion of the post adjacent the top end of said post so that said second cross member is pivotable about a horizontal aixs;
a pair of seats depending from the opposite ends of the second cross member; and
lock means in the form of a vertically translatable bar mounted on the upper portion of said post and having a first position adapted to prevent rotation of the upper portion of the post with respect to the lower portion so that the swings can be used as a swing set and the seats depending from the second cross member can be used as a seesaw, said lock means having a second postion adapted to prevent pivoting of the second cross member and to allow rotation of the upper portion of the post with respect to the lower portion so that the pair of swings and the seats depending from the second cross member can be used as a merry-go-round.

3,858,872
CAPTIVE FLYING TOY
William F. Summerfield; Joseph F. Plizzotto, both of Huntington Beach, and Denis V. Bosley, Palos Verdes Peninsula, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 5, 1973, Ser. No. 412,948
Int. Cl. A63h *13/20*
U.S. Cl. 272—31 A **8 Claims**



1. A captive flying toy comprising:
a centrally located pylon having a turntable;
drive means coupled to said turntable for rotating said turntable;
a flexible boom having a first end and a second end, said first end connected to said turntable of said centrally located pylon;
a toy member mounted to said second end of said flexible boom;
an electric motor and motor shaft for rotating said drive means;
a first electrical circuit including first battery means and a first rheostat for energizing said electric motor to drive said motor shaft in a clockwise direction;
a second electrical circuit including second battery means and a second rheostat for energizing said electric motor to drive said motor shaft in a counterclockwise direction;
mechanical means for actuating and controlling said flying toy, said mechanical means including a conductive wiper arm that may be rotated by actuation of said mechanical means to contact either said first rheostat or said second rheostat to complete electrical connection to said first or second electrical circuit, respectively.

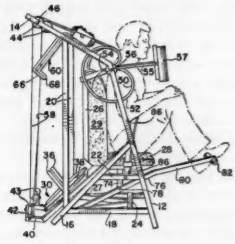
3,858,873
WEIGHT LIFTING EXERCISING DEVICES
Arthur A. Jones, P.O. Box 1783, Swartz Creek, Mich. 32720
Continuation of Ser. No. 172,478, Aug. 17, 1971, abandoned.
This application May 15, 1973, Ser. No. 360,590
Int. Cl. A63b *21/00*
U.S. Cl. 272—58 **13 Claims**

1. A machine capable of high muscle fiber involvement exercise of at least one prime body part connected to a prime body joint;
said machine including a frame having a front side, a rear side, and a body receiving area for an exerciser in which the complete body of such an exerciser can be completely received therein, said area being disposed on the front side which is opposite to said rear side;
structural means, located on said front side and rotatably supported by said frame, for receiving force from a prime body part of an exerciser positioned in said body receiving area;

resistance means adapted to act in opposition to movement of said force receiving means by a user, which said resistance means may be variable;

resistance resolving means for resolving gravity pull of said resistance means into varying force components that are resisted by a user during rotation of said resistance resolving means, said resistance resolving means being operably connected to said force receiving means, said resistance resolving means being located on said front side and being rotatable with said force receiving means;

said resistance resolving means having a variable moment arm whereby the product of said variable moment arm



and said resistance means determines the torque applied to said force receiving means;

the axis of rotation of said resolving means and,

the axis of the joint about which a prime body part to be exercised is rotated

are essentially coaxial and the distance from said body joint to a place where the prime body part is applied to said force receiving means is practically the same as

the distance from the axis of rotation of said resolving means to the place of application of said prime body part on the structural means for receiving a force from a prime body part.

3,858,874

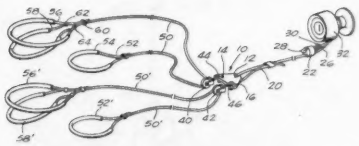
PUSH-PULL TYPE OF EXERCISING DEVICE

Benjamin Weider, Quebec, Canada, assignor to Internax Holdings Limited, Nassau, Bahamas

Filed Feb. 22, 1973, Ser. No. 334,902

Int. Cl. A63b *23/02, 21/00*

U.S. Cl. 272—79 R **3 Claims**



3. A device as in claim **2**, wherein said member is in the form of a plate having holes therein, said pulleys including hooks hooked into said holes, and said securing means includes a line attached to said plate at another hole in said plate.

3,858,875

GAP JUMPING TOY VEHICLE GAME

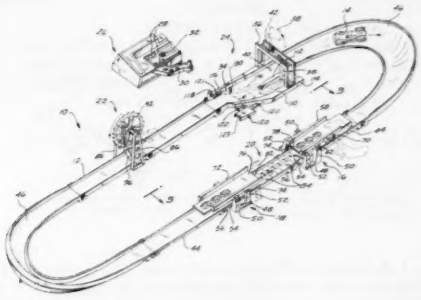
Henry Nemeth, Massapequa, Long Island, and Edward Snyder, III, Dix Hills, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,184

Int. Cl. A63h *18/00*

U.S. Cl. 273—1 R **23 Claims**

1. A toy vehicle game comprising a vehicle track, a toy vehicle adapted to move along said track and a pair of ramp assemblies associated with said track and having independent longitudinally aligned ramps respectively mounted therein and located in spaced relation to each other, thereby to define a gap between said ramp assemblies; at least one of said ramp assemblies being movable with respect to said track and the other of said ramp assemblies to permit adjustment of the size



of said gap, and at least one of said ramps being movably mounted on its associated ramp assembly for selective movement between a horizontal position above said track and an inclined position wherein one end of said ramp is adjacent said track thereby to direct a vehicle on the track onto said one ramp across said gap towards the other of said ramp assemblies.

3,858,876

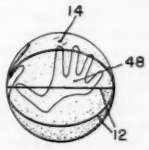
BASKETBALL TRAINING DEVICE

Roy G. Williams, Grosrenor Square Apt. 5-B, Greensboro, N.C. 27284

Filed Aug. 27, 1973, Ser. No. 392,074

Int. Cl. A63b *43/00*

U.S. Cl. 273—1.5 A **7 Claims**

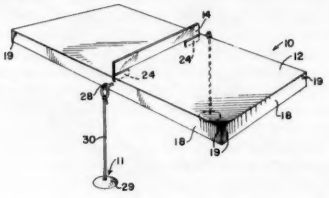


1. A basketball training device for imparting to a player the proper manner of grasping a basketball prior to shooting comprising, a hollow, inflatable body of spherical form, said body being selectively provided on the outer surface with gripping indicia designating the ball support positions of the thumb and fingers of both the shooting and clamping hands of a player when shooting the basketball, said indicia disposing the thumb and fingers of a player's shooting hand in a predetermined spaced pattern with the index finger indicia bisecting said spherical body, and with the indicia for the thumb and little finger of the shooting hand spaced on either side of the index finger indicia for positioning the thumb and little finger to serve as tracks for guiding and controlling the rotation and thrust of said body, said indicia for the thumb of the clamping hand being spaced from and perpendicular to the indicia for the thumb of the shooting hand and the indicia for all fingers extending toward the top of said spherical body when positioned for shooting.

3,858,877
INVERTIBLE FLOATING GAME BOARD WITH PING-PONG AND POOL TABLE SURFACES

William Lundstrom, 3552 Pheasant Run Cir., Ann arbor, Mich. 48104

Continuation-in-part of Ser. No. 163,909, July 19, 1971, abandoned. This application Oct. 3, 1972, Ser. No. 294,640
Int. Cl. A63d *15/04*; A63b *67/04*
U.S. Cl. 273—5 R 12 Claims

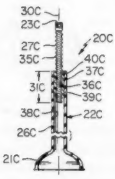


1. A floating game board comprising a central portion and four side walls, said central portion comprising a block of low density foamed plastic material, first surface providing means overlying one surface of said foamed plastic material, and second surface providing means overlying the other surface, said two surface providing means providing exposed hard dense surfaces suitable for rolling and bouncing ball type of games, said side walls extending beyond said first surface providing means to provide a rail which completely surrounds said first surface providing means, the surface thereof providing a pool table surface, pockets formed at the corners of said first surface providing means, said second surface providing means providing a Ping-pong table surface when said game board is inverted, and means providing a socket for receiving foot portions of a net on said Ping-pong table surface.

3,858,878
BASEBALL AND SOFTBALL TYPE BALL TIE

Joseph V. Tassone, 2425 Raunsdale Rd., Kettering, Ohio 45440

Filed June 1, 1972, Ser. No. 258,863
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 R 7 Claims

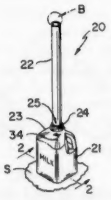


1. A baseball and softball type ball tee comprising, a base and an upstanding column carried by said base and having means for supporting a ball thereon, said base being dimensioned to enable said tee to be knocked over easily, said column having a vertical dimension which is substantially greater than the largest horizontal dimension of said base enabling said means for supporting a ball thereon to be located so that it can support a ball for striking by a batter with a ball bat at a vertical height in a ball strike zone which is at least equal to a vertical height defined by the batter's knees, said column and base each being made substantially entirely of a yieldable resilient elastomeric material, said base being hollow and of substantially uniform wall thickness throughout its vertical height, said column being hollow throughout its vertical height and having at least a part of its vertical height of substantially uniform wall thickness, said column comprising a lower part fixed to said base and having a substantially vertical longitudinal axis and an upper part interconnected coaxially with said lower part in substantially telescoped relation, said base and at least a lower portion of said lower part of said column being a single-piece hollow structure and said lower portion having a wall thickness which is substantially equal to said substantially uniform wall thickness of said base, said column being adapted to be struck by said ball bat with said column and bat remaining intact and said base and a major portion of said column being adapted to be easily flattened transverse a longitudinal axis therethrough upon applying compressive forces thereagainst to thereby assure a person falling thereon will be free of injury, said upper part having said supporting means defined as a top thereof, said upper part being readily axially adjustable to an infinite number of positions relative to said lower part to change the position of said supporting means and thereby enable a batter using said tee to support a ball at any desired vertical position, one of said parts having outside threads provided thereon and the other said parts having cooperating inside threads, said parts being arranged in telescoped relation with said threads in threaded engagement and with said threads cooperating to hold said upper part in telescoped relation at any of said infinite number of positions, said one part comprising said upper part and having a substantial vertical height and an integral substantially convoluted configuration along the major portion of said vertical height with the outside surface of said convoluted configuration defining said outside threads, said upper part having a substantially helical configuration along said major portion of said vertical height, and further comprising spring means resiliently holding said upper part in an upright manner.

3,858,879
BALL TEE

James T. Candor, 5440 Cynthia Ln., Dayton, 45429, and Joseph V. Tassone, 2425 Rawndale Rd., Kettering, 45440, both of Ohio

Filed Jan. 26, 1973, Ser. No. 326,806
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 R 4 Claims



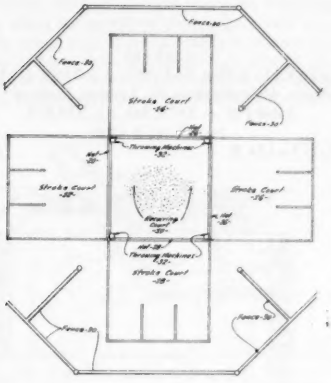
1. A ball tee comprising the combination of a plastic container base member and an elongated tubular ball support, said container base member having a tubular opening disposed above a bottom wall, said tubular ball support being telescopically received by said opening and supported thereby and extending vertically out of the same to a predetermined height thereabove so that when said container has said bottom wall disposed on a support surface, said tubular ball support will be disposed in an upright manner so a ball can be hit off the upper end thereof, said bottom wall being provided with means telescopically receiving and stabilizing the lower end of said tubular ball support.

3,858,880

TENNIS PRACTICE STROKE COURTS WITH COMMON BALL RECEIVE COURT

Carl D. Graves, 581 Muskingum Ave., Pacific Palisades, Calif. 90272

Filed Aug. 7, 1972, Ser. No. 278,293
Int. Cl. A63b *69/38*
U.S. Cl. 273—29 A **7 Claims**



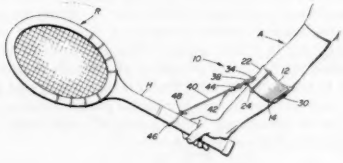
1. A game practice range comprising: a common rectangular-shaped receive court of dimensions corresponding to one half a standard sized tennis court; a plurality of rectangular-shaped stroke courts, each of essentially the same dimensions as said common receive court and each aligned with said common receive court to constitute therewith one of a plurality of individual standard sized tennis courts to permit balls to be hit from each of said stroke courts into said common receive court; and a net dividing each of said stroke courts from said common receive court.

3,858,881

AID FOR RELIEVING OR PREVENTING TENNIS ELBOW INJURY

Arthur Hurwitz, 2780 N.E. 183rd St., Century 21, Apt. 2007, North Miami Beach, Fla. 33160

Filed July 16, 1973, Ser. No. 379,562
Int. Cl. A63b *69/38*
U.S. Cl. 273—29 A **2 Claims**



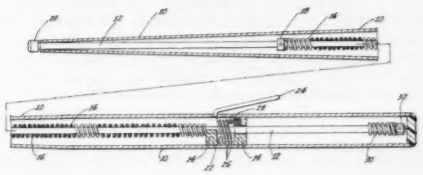
1. A tennis game player aid (**10**) comprising a band (**12**) of a length to be snugly securable about the forearm (A) of the player, said band (**12**) including a buckle loop (**24**) secured (**26**) at one end (**22**) of said band, a substantial length of separable fabric fastener (**30**) secured (**32**) on said band and extending toward said buckle loop end (**22**), a comparatively short length of compelemntary separable fabric fastener (**18**) secured (**20**) on said band adjacent its other end (**14**), a ring (**34**) securely fastened (**36**) to said bukcle loop end (**22**) of said band (**12**), an elastic cord (**40**), hook means (**38**) securing one end (**42**) of said elastic cord (**40**) to said ring (**34**), the other end (**48**) of said elastic cord (**40**) being formed in a loop (**46**) to extend over and secure about a tennis racquet handle (H), said elastic cord being of a length substantially equal to the distance between a tennis racquet handle and the forearm of the hand grasping said handle, whereby movement of the racquet (R) away from the forearm (A) during play of the game is yieldably resisted by said elastic cord (**40**) while the forearm (A) of the player is held in compression by said snugly secured band (**12**).

3,858,882

SPRING LOADED CUE

Clyde E. Fox, 11107 Dulcet Ave., Northridge, Calif. 91324, and Gordon L. Auclair, 8342 Rudnick Ave., Canoga Park, Calif. 91304

Filed Dec. 19, 1973, Ser. No. 426,130
Int. Cl. A63d *15/08*
U.S. Cl. 273—69 **4 Claims**



1. A spring-loaded pool or billard cue, or the like, comprising: an elongated tubular housing; a rod having substantially the same length as said housing coaxially mounted in said housing for longitudinal movement with respect thereto between a loaded position in which the rod is retracted into the housing and a released position in which a first end of the rod protrudes from one end of the housing; an apertured block mounted at an intermediate position within said tubular housing and having a central aperture therein through which said rod extends, said block having a length short as compared with the length of the housing and serving to maintain said rod in coaxial relationship with said housing; a first retainer mounted on said rod at an intermediate position thereon; a power spring mounted in said housing coaxially encompassing said rod and having one end engaging said retainer and the other end engaging said block for resiliently biasing said rod towards said released position in which the first end of said rod protrudes from the end of said tubular housing; a trigger mechanism mounted in said housing including an actuator washer supported in a slot in said block coaxial with said rod and tiltable in said slot between an upright release position and an inclined lock position with respect to said rod, at least one trigger washer freely mounted on said rod adjacent said actuator washer and coacting with said actuator washer on the side thereof remote from said first end of said rod; a trigger member attached to said actuator washer at a point thereon diametrically opposite said slot, said trigger member extending externally of said tubular housing and actuable to tilt said actuator washer to said release position; and a trigger spring mounted in said block and engaging said trigger washer on the side thereof remote from said actuator washer and adjacent said diametrically opposite point thereon to exert a force against said trigger washer and bias said trigger washer and said actuator washer to said inclined lock position.

3,858,883

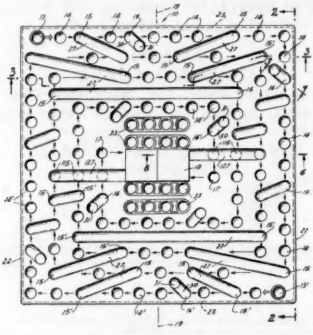
GAME HAVING TILTABLE PLAYING BOARD

Norman Fabricant, 94-19 64th, Rego Park, N.Y. 11374

Filed Feb. 5, 1974, Ser. No. 439,780
Int. Cl. A63f *7/00*
U.S. Cl. 273—110 **15 Claims**

1. A game comprising a board and a plurality of playing pieces, said board having a playing surface bearing a path along which said playing pieces are to be moved from a starting point to a goal, said path being defined by a series of discrete positions, through which said playing pieces are to be

moved through in succession, support means defining an axis about which said playing surface can tilt between two alternative non-horizontal orientations, said playing surface tilting downwardly in one direction in one of said orientations and tilting downwardly in the opposite direction in the other of



said orientations, and at least one slide extending between two of said positions which are not in succession along said path, said slide serving to guide the movement of a playing piece from one of said two positions to the other when said playing surface is tilted.

3,858,884

SIMULATED SHOOTING APPARATUS INCLUDING A TRANSPARENT STRIKING MEMBER

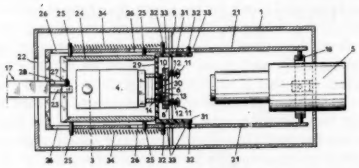
Andre J. M. Cassagnes, Vitry Sur Seine, France, assignor to Les Jouets Educatifs Universels, Drancy, France

Filed Jan. 24, 1973, Ser. No. 326,251

Claims priority, application France, Jan. 26, 1972, 72.02581

Int. Cl. A63f *9/02*

U.S. Cl. 273—101.2 **6 Claims**



1. In a shooting game having a housing, a light source mounted on the housing, a lens mounted on the housing and spaced from the light source, means for positioning a perforable support between the light source and the lens for permitting an image of the support to be projected onto a screenlike surface, a puncturing member positioned adjacent the support and movable for puncturing same, a trigger member movably mounted relative to said housing, and an impact member controlled by the trigger member and positioned to impact against said puncturing member upon release of the trigger member for causing said puncturing member to puncture said support, the perforation of said support by said puncturing member being visible on the screenlike surface when the image of said support is projected thereon, comprising the improvement wherein said puncturing member comprises a plate positioned between said light source and said support, said plate permitting light rays to pass therethrough whereby the light rays from said light source pass through both said plate and said support prior to being projected onto said screenlike surface, said plate having a pointed puncturing element fixed thereto and projecting from one side thereof in a direction toward said support, resilient means coacting with said puncturing member for normally maintaining same in a position wherein the free end of said puncturing element is slightly spaced from said support, and mounting means movably supporting said plate on said housing for permitting said plate to be moved in a direction toward said support, and said mounting means including universal joint means movably supporting said plate on said housing for permitting said plate to be moved laterally relative to said support in any selected direction.

3,858,885

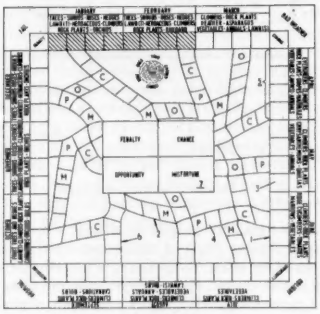
APPARATUS FOR PLAYING A BOARD GAME

Alan Adcock, 41 Nottingham Pl., London, England

Filed Feb. 6, 1973, Ser. No. 330,072

Int. Cl. A63f *3/00*

U.S. Cl. 273—134 B **4 Claims**



1. Apparatus for playing a game comprising a board having a peripheral path divided into a plurality of steps grouped to form a plurality of sections arranged in sequence along said path, and an inner circuitous path connecting once with each of said sections of the peripheral path, a plurality of markers of which an outer path marker of each player is in play moved step by step through said sections around said peripheral path and an inner path marker is moved step by tep along at least a part of said inner path, in which by travelling along the inner circuitous path, the player may incur penalties or obtain rewards according to the position of his inner path marker, each move being determined by a chance reading of an indicia bearing means, a plurality of pieces representing money, said pieces being alotted to each player before the game commences, and a plurality of symbols representing articles which can be purchased by a player with the money during the game, the symbols bearing indicia designating numbers of points which contribute to a total required by each player to win the game, means providing for penalties or rewards to a player according to the position of his markers on parts of said paths and each said sections of said peripheral path indicating what articles can be purchased when a player's said outer path marker is within that section.

3,858,886

GOLF CLUBS OF THE TYPE KNOWN AS IRONS

Floyd M. Cosby, 301 Jackson St., Rosenberg, Tex. 77469

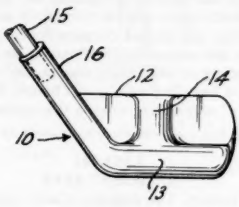
Continuation-in-part of Ser. No. 95,242, Dec. 4, 1970, abandoned. This application Nov. 29, 1972, Ser. No. 310,429

Int. Cl. A63b *53/04*

U.S. Cl. 273—167 F **2 Claims**

1. Golf club of the type referred to as an iron, comprising a horizontally elongate club head having the front side thereof completely flat to form a hitting face over its entire area whereby a golf ball may be struck at any point thereof without angular deflection of the golf ball, said hitting face having a loft angle of conventional angular inclination for an iron-type

club head, one end of said club head being angularly inclined upwardly and outwardly and forming the heel of the club head, the other end of said club head forming the toe of said club head, the reverse side of said club head having disposed thereon a uniformly thickened, integral, and continuous projecting ridge, said projecting ridge being located (a) coextensively along the heel end and completely within the boundary edge of said heel end; (b) coextensively along the lower edge of said reverse side from the heel end to the toe end; and (c) vertically along the center of said reverse side to approximately the upper edge of the club head in order to distribute the weight of the club head symmetrically about a plane perpendicular to the center of the hitting face and to adjust the horizontal center of gravity of said club head to its horizontal



center whereby said club head will be less likely to twist about vertically directed axes upon striking golf balls at random points of said hitting face, the upper and lower edges of said club head and of said hitting face being substantially parallel whereby the heel and toe portions of said club head are of substantially the same weight, said thickened portion along said heel at said reverse side of said club head forming a hosel, a shaft having its lower end fixed in said hosel, and further having the length of said club head from the toe to heel ends being approximately three to three and one-half inches and with the maximum distance of the shaft axis to the center of the hitting face being approximately one and three-quarters inches in order to further reduce the torque produced on the shaft by ball impact.

3,858,887

MINIATURE GOLF COURSE

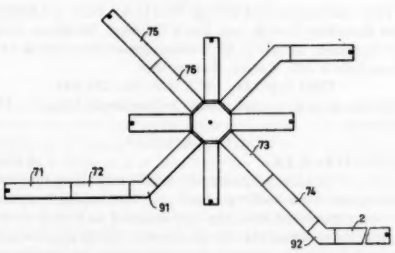
Karl Lennart Wallin, Strandvagen 59, Stockholm, Sweden

Filed May 9, 1972, Ser. No. 251,770

Claims priority, application Switzerland, May 12, 1971, 6165/71

Int. Cl. A63b *67/02*

U.S. Cl. 273—176 G **1 Claim**



1. A miniature golf course including course members comprising in combination

a pair of hollow frame members positioned to form support beams on opposite sides of

a planar deck, said deck being supported by said frame members,

said frame members having a greater dimension in their main load bearing direction than their dimension in the lateral load-bearing direction perpendicular to the main load direction,

the greater dimension of said frame members being substantially perpendicular to the upper surface of said planar deck,

a continuous transition between said planar deck and the side of said frame members, said transition including a lip on each frame member having a curvate surface tangent to the planar deck and to the side of said frame member, a cover of synthetic carpet secured on said deck and covering said lips and at least a portion of the side of said frame members,

the frame members each being provided with at least one vertical adjusting member positioned beneath its associated frame member and having an adjusting portion extending through the lower portion of the frame member and upwardly into the hollow portion thereof,

joining means for joining adjacent course members to each other, said joining means including a rigid joining member for insertion into the hollow portion of the frame member, said rigid joining member being shaped to substantially fill the internal cross-sectional area of the hollow portion of the frame member,

a recess in said rigid joining member for receiving said upwardly extending portion of the vertical adjusting member, and

said joining means including fastening means for locking each frame member to its associated rigid joining member.

The course members can be manufactured so that the course itself is given a width of for instance 50 or 80 cm and the length can for instance be between 1 and 5 m, preferably about 2 m. Several course members can be assembled into a minigolf course, as is for instance apparent from FIG. **4.** In this type of course, corner parts and a "green" part are also required, in addition to the straight course parts described above. The corner parts are built in the same way as the straight course parts, while the angled

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3,858,888

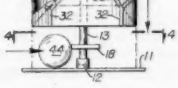
GOLFBALL PUTTING GAME APPARATUS

Lyman W. Young, 1551 Pacific Ave., Apt. 6, Santa Rosa, Calif. 95404

Filed Nov. 21, 1973, Ser. No. 417,750

Int. Cl. A63b *69/36*

U.S. Cl. 273—177 R **4 Claims**



1. Apparatus for a game simulating golf putting for use with a conventional golf ball said apparatus comprising a flat base of sheet material, a rod projecting up from said base and formed with a ledge located above said base, and an inverted cup having a bottom edge of a diameter equal to that of a conventional golf green cup and a top formed with a substantially central hole larger than the cross section of said rod whereby said cup may be positioned with a portion of said top around said central hole resting on said ledge with the bottom edge of said cup positioned above said base a distance greater than the diameter of said conventional golf ball, whereby when said rod is jarred by contact of a ball therewith said cup is dislodged from said ledge to drop to engage said ball.

3,858,889

TONE ARM FOR RECORD PLAYERS AND RECORD CHANGERS

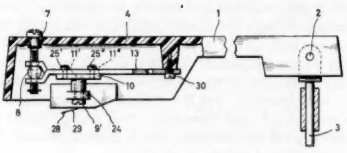
Hans-Gerhard Hagenah, St. Georgen/Schwarzwald, Germany, assignor to Firma-Perpetuum-Ebner, Fabrik fur Feinmechanik Und Elektrotechnik Steidinger & Co. kom. ges., Georgen/Schwarzwald, Germany

Filed Aug. 16, 1965, Ser. No. 479,983

Claims priority, application Germany, Jan. 29, 1965, 35972The portion of the term of this patent subsequent to Oct. 7, 1999, has been disclaimed.

Int. Cl. G11b *3/02*

U.S. Cl. 274—37 **3 Claims**



1. In a tone arm means for record players including a pivotal mounting means at one end for tilting about a horizontal axis with respect to a record surface, said tone arm means having support means for a pickup cartridge at the other end, said support means being attached to the tone arm means for tilting movement with respect to the longitudinal axis of the arm, said support means including an elongated plate, said plate being fixedly secured at one end to the tone arm means, said plate having a transversely weakened area adjacent said one end to provide a deformable pivot area, and adjustment means for support means whereby the tracking angle of the cartridge stylus may be varied, said adjustment means including a rotatable member extending between the tone arm means and the support means, said member having a threaded connection with one of said last two mentioned elements.

3,858,890

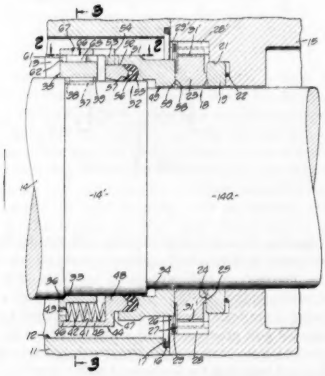
SPRING-LOADED MECHANICAL SEAL WITH TORQUE CONTROL

Winfred J. Wiese, Whittier, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 23, 1973, Ser. No. 344,379

Int. Cl. F16j *15/34*

U.S. Cl. 277—93 R **13 Claims**



1. Mechanical seal apparatus for sealing a rotary shaft to a housing having an opening through which the shaft extends comprising: a stationary sealing ring, means for mounting said stationary sealing ring on the housing, a rotary sealing ring, means for mounting said rotary sealing ring on the shaft for limited axial and limited rotational shifting movements thereon, said sealing rings having complemental, opposed radial sealing faces, resilient means for applying a biasing force to said rotary sealing ring for urging it axially into sealing relationship with said stationary sealing ring, and means associated with said resilient means and responsive to the torque produced by the drag between said sealing rings upon their relative rotation in either direction for applying to said resilient means a force opposed to said biasing force to urge said rotary sealing ring away from said stationary sealing ring, said means associated with said resilient means including first cooperating cam means carried by said shaft and said rotary sealing ring and responsive to rotational shifting of said rotary sealing ring on the shaft for producing said force opposed to said biasing force upon relative rotation of said sealing rings in one direction, and second cooperating cam means carried by said shaft and said rotary sealing ring and responsive to rotational shifting of said rotary sealing ring on the shaft for producing said force opposed to said biasing force upon relative rotation of said sealing rings in the opposite direction.

3,858,891

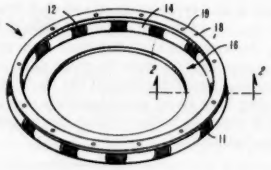
RESILIENT SEAL

Robert B. Trelease, Los Angeles, Calif., assignor to Hitco, Irvine, Calif.

Filed Jan. 2, 1973, Ser. No. 320,667

Int. Cl. F16j *15/00*

U.S. Cl. 277—229 **13 Claims**



1. A resilient seal comprising:

a resilient, fluid-permeable inner element;

impermeable means covering portions of the inner element and including a plurality of individual cover elements disposed over the inner element at different locations along the length of the inner element.

3,858,892

TOOL HOLDER EQUIPPED WITH A CODE CARRIER

Arno Rutschke, Zurich, and Erich Grabher, Dietlikon, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Sept. 18, 1972, Ser. No. 289,801

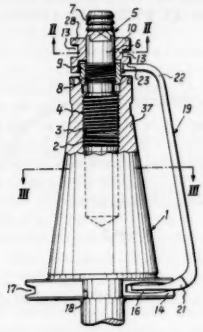
Claims priority, application Switzerland, Oct. 1, 1971, 14325/71

Int. Cl. G01b *5/14*

U.S. Cl. 279—1 TS **4 Claims**

1. A tool holder comprising an axially extending tool holder body member for holding a tool, said tool holder body member being provided with one end adapted to hold a tool and internal axial threading, an axially extending pin threadably connected with the internal threading of the tool holder body member and serving for the attachment of the tool holder to a tool driving spindle operator, a tool code carrier, said code carrier comprising a sleeve member seated upon said pin, said sleeve member being provided with tangentially directed slots transverse to said axial direction and arranged at diametrically opposite locations above one another at the periphery of the sleeve member, said tool holder body member including a flange adjacent to said tool removable caliper means in engagement with said sleeve and flange for positioning said

sleeve member in a predetermined axial and radial direction at the pin with respect to said flange, and means for removably



locking said fixed sleeve member in radial and axial direction with respect to the pin.

3,858,893

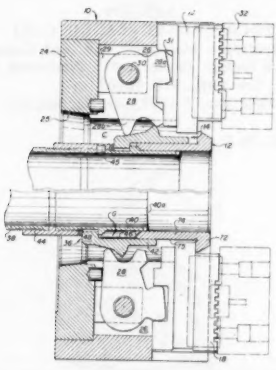
SELF-CENTERING AND COMPENSATING CHUCK

George J. Ovanin, Euclid, Ohio, assignor to The S-P Manufacturing Corporation, Solon, Ohio

Continuation of Ser. No. 234,538, March 14, 1972, abandoned. This application June 19, 1973, Ser. No. 371,367

Int. Cl. B23b *31/16*

U.S. Cl. 279—17 **12 Claims**



1. A chuck adaptable for compensating and centering actions for use with bar work, chucking work and shaft work, comprising: a chuck body; a plurality of work gripping jaws carried in a front face of said body for movement toward and away from each other; and jaw actuating means in the body for moving the jaws toward and away from each other, including an annular jaw actuator movable axially toward and away from the front face to actuate the jaws, a tubular reciprocable operator surrounded by said jaw actuator, means connecting said jaw actuator to said tubular operator for axial movement therewith and for limited floating movement relative thereto transversely of the direction of said axial movement, and a cylindrical gap between the tubular operator and the actuator, opening toward the front face of the chuck body, to closely and removably receive a guide member that prevents said floating movement without regard to the circumferential location of the guide member within the gap.

3,858,894

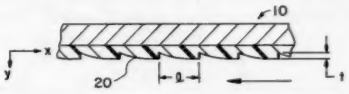
THREE-DIMENSIONAL SKI SURFACE

Istvan L. Ver, Arlington; William D. Danner, Byfield, both of Mass., and Hans Woitschatzke, Wiesbaden-Kohlheck, Germany, assignors to Skisearch, Inc., Boston, Mass., by said Danner and Woitschatzke and Bolt Beranek and Newman, Inc., Cambridge, Mass., by said Ver

Filed Sept. 2, 1971, Ser. No. 177,315

Int. Cl. A63c *5/04*

U.S. Cl. 280—11.13 Y **9 Claims**



1. A ski having a three-dimensional patterned bottom surface, the pattern including a plurality of protuberances extending from the surface thereof, said protuberances irregularly repeated over the bottom surface in a nonharmonic pattern whereby pure-tone sonic components generated by sliding contact of the ski bottom surface with a supporting surface are eliminated or minimized.

3,858,895

SKI BINDING

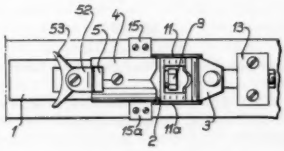
Daniel Lacroix, 39220 Les Rousses, France

Filed July 31, 1973, Ser. No. 384,178

Claims priority, application France, Aug. 21, 1972, 72.29785

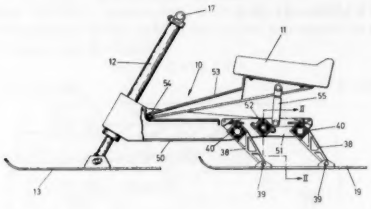
Int. Cl. A63c *9/082*

U.S. Cl. 280—11.35 T **8 Claims**



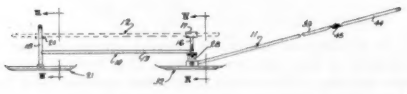
1. In a safety ski binding, a security release mechanism comprising a first member having a first bearing surface; means defining a first recess in said first member, said first recess opening through said first bearing surface; a second member having a second bearing surface; means defining a second recess in said second member, said second recess opening through said second bearing surface; means for connecting said first and second members together with said first and second surfaces facing one another, said connecting means including a rod extending through said first and second recesses, means for pivotally connecting said rod to said first member, and spring means for urging said second member relative to said rod towards said first member to hold said first and second bearing surfaces together; and means defining on said first and second bearing surfaces complementary profiles coacting together under the action of said spring means for holding said second member in a rest position relative to said first member and for opposing movement of said second member relative to said first member away from said rest position.

3,858,896
SKI-BOB
Jean-Yves Evequoz, 17 Route de la Dixence, Sion, Switzerland
Filed June 2, 1972, Ser. No. 260,027
Claims priority, application Switzerland, Feb. 8, 1972, 1814/72
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **3 Claims**



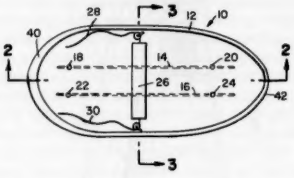
1. A ski-bob comprising:
a. a chassis,
b. a steerable front ski connected to said chassis,
c. two rear skis, each rear ski being independently connected to said chassis by a pair of suspension devices,
d. each suspension device being pivotally connected at one end to said chassis about first spaced apart substantially transverse axes and being pivotally connected at the other end to a rear ski about second spaced apart substantially transverse axes,
e. and a torsion shock absorbing means connected to each suspension device at at least one of said axes,
f. said steerable front ski being pivotally connected to a steering column about a generally transverse axis by a suspension device including a torsion operating shock absorbing member, and the suspension device of the front ski comprising two pairs of arms pivotally interconnected together and pivotally connected to the steering column and to the ski about generally transverse axes, said two pairs of arms forming a deformable quadrilateral.

3,858,897
SAFETY SLED
John Guythar Bradford, 47 Mansfield Dr., Ancaster, Ontario, Canada
Filed May 29, 1973, Ser. No. 364,319
Int. Cl. B62b *13/04*
U.S. Cl. 280—17 **9 Claims**



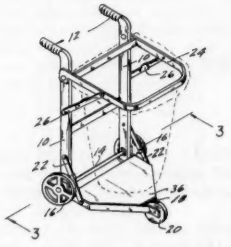
1. A ski vehicle for use in carrying an injured skier on a stretcher or other load, said vehicle comprising an undercarriage structure supported at the rear end by a pair of non-steerable skis having downwardly extending keel members and supported at the front ends by a pair of steerable skis, said front skis being individually mounted for horizontal turning and being interconnected by a parallel linkage for parallel turning, said linkage being in the form of a pair of side limb members, each being pivotally connected at one end to a front ski for swinging through a vertical plane and extending forwardly of the ski and said limb members being pivotally connected at their forward ends remote from the skis to a rigid steering bar which maintains the remote ends a fixed distance apart thereby forming a linkage parallelogram.

3,858,898
STEERABLE TOBOGGAN
Hallie C. Pfeifer, 1790 Grassland, Reno, Nev. 89502
Filed June 22, 1973, Ser. No. 372,544
Int. Cl. B62b *13/08, 17/00*
U.S. Cl. 280—22 **11 Claims**



1. A steerable toboggan comprising:
a generally flat-bottomed shell adapted to slide over a surface;
elongate guide vanes on the underside of the shell;
means for pivotally attaching each said guide vane to said shell adjacent both ends of each respective vane, said attaching means including means for allowing translation of said guide vanes with respect to said attachment means to allow for relatively large transverse deflection of the guide vanes;
manually controlled means for transversely deflecting the elongate guide vanes at the centers thereof to bend said guide vanes into an arc to turn the shell as it slides over the surface, said manually controlled means including means for restricting translation of the guide vanes with respect to the manually controlled means.

3,858,899
FOLDING CART - BAGGIE CART
Harris W. Bontrager, Montpelier, Ind., and George Spector, both of c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007
Filed Nov. 7, 1972, Ser. No. 304,333
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 R **1 Claim**



1. A folding cart having spaced parallel similar vertical members with a pair of handles extending transversely outwardly from the upper ends of said members, including an axle mounted perpendicularly through the lower ends of said members and having a pair of wheels mounted on the outer ends of the axle whereby the members have outer sides disposed parallel to and between said wheels, in combination with a platform adjustably attached to the lower ends of the sides of said members by a pair of similar pivotable foldable linkages, each of said linkages being pivoted at one end to the lower end of respective one of said members above said wheels, and at the opposite end each linkage being pivoted to the platform at a point at the same elevation of the wheel axle when the platform is extended horizontally and whereby said linkage permits upward folding of the platform to a vertical position

parallel and closely adjacent to said members, including a front wheel mounted on bracket extending in front of the platform, said front wheel having an axis parallel to the axle at a level sustantially same as that of the platform whereby the wheel extends the same distance below and above the platform, in further combination with a frame adapted to support the upper perimeter of a bag, including means for mounting the frame pivotally on the members whereby the frame is pivotable from an upper horizontal position extending in front of the handles and members, downwardly to a vertical position adjacent the members, said means including a folding linkage to maintain the frame in the horizontal position and collapsible to permit downward pivoting of the frame to the vertical position, wherein the handles are pivotally mounted on the members, each of said handles having an upper pivot whereby the handle is movable from a horizontal to a vertical position adjacent the members, each of said members including an adjustable stop mounted in a slot in each of said members, said stop being movable from an upper position to a lower position, whereby each handle engages said stop in said upper and lower position to retain the handle in said upper and lower position including clips for securing removably the bag on said frame.

3,858,900

SKI POLE AND SNOW BASKET THEREFOR

Matthew H. Quinn, 412 Melvin Ave., Racine, Wis. 53404

Continuation-in-part of Ser. No. 223,143, Feb. 3, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,260

Int. Cl. A63c *11/24*

U.S. Cl. 280—11.37 N **1 Claim**

1. A ski pole comprising a shaft having an upper handle end and a lower snow penetrating end terminating in a tip, a conically-shaped hollow basket having a continuous conical side wall being free of any openings or slits and with said basket being invertedly disposed on said shaft adjacent said snow penetrating end, the larger circular end of said basket having a flat flange surface disposed spaced radially outwardly from said shaft and along a plane transverse to the axis of said shaft and to a radially outwardly disposed circular edge, said surface extending around said shaft and faced in the direction toward said shaft snow penetrating end for pressing onto the snow in the use of the ski pole when said snow penetrating end is pushed into the snow, said basket having its exterior conical surface extending from said circular edge and in the direction toward said pole handle and radially inwardly relative to said shaft to a location adjacent said shaft to present an oblique surface between said shaft and said circular edge, the angle between said circular edge and said tip being between 25° and 45° and measured relative to the longitudinal axis of said shaft, said basket being of a resilient material for movement of said flange surface relative to said shaft, said shaft being tapered along its length, said basket having an opening at the apex of said conical basket for the encircling of said tapered shaft by said basket, said basket being enlarged in the thickness of the material surrounding and identifying said opening, and a circular means wedged onto said tapered shaft and being in contact with said enlarged thickness of said basket on axially opposite sides of said thickness along said shaft for locating and restraining said basket axially of said shaft.

3,858,901

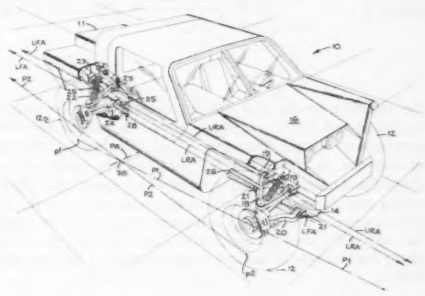
PITCH CONTROL FOR ALL TERRAIN VEHICLE

Norman B. Johnson, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 26, 1972, Ser. No. 318,160

Int. Cl. B60g *3/18*

U.S. Cl. 280—96.2 R **2 Claims**



1. A four wheeled road vehicle of the type having a frame and an independent suspension comprising upper and lower control arms pivoted to the frame and mounting each wheel; the improvement whereby the frame pivot axes of the control arms for all wheels are vertically convergent, the control arm axes for the rear wheels intersecting one transverse instantaneous center line and the control arm axes for the front wheels intersecting another transverse instantaneous center line, the instantaneous center line of the rear wheel control arm axes lying a substantial distance forward of the front wheels and the instantaneous center line of the front wheel control arm axes lying at substantially the same distance rearward of the rear wheels, reference lines drawn between the instantaneous center lines and the contact points of their associated wheels with the ground intersecting at a transverse vehicle pitch axis that is closely between the front and rear wheels and is adjacent to the center of gravity of the vehicle.

3,858,902

VARIABLE-LOAD SUSPENSION FOR LIGHT VEHICLES

Paul W. Howells, Morrisville, and Robert N. Lothes, Manlius, both of N.Y., assignors to Syracuse University Research Corporation, Syracuse, N.Y.

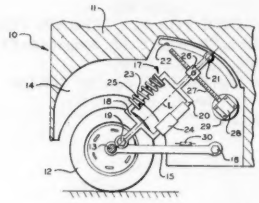
Filed Apr. 23, 1973, Ser. No. 353,733

Int. Cl. B60g *11/56*

U.S. Cl. 280—124 R **3 Claims**

1. A suspension system for wheeled vehicles having a body subject to wide variations in vehicle load, comprising: selected wheels each being rotatably supported by independent axle means, each axle means being carried on one end of an arm having a substantially horizontal normal disposition, the other end of each arm being pivotally secured to the body for vertical movement of the wheel with respect to the body, a telescopic unit for each wheel having a spring and damper connected between opposite ends of the unit to act in lines of action along substantially the same line, one end of the unit being pivotally connected to the arm adjacent its axle-connected end and the other end of the unit bearing a roller,

a curved track secured to the body for guiding the roller therealong means on the arm for sensing its inclination from its normal disposition, and motor driven means controllingly connected to the unit and responsive to the sensing means for inclining the unit in one direction to restore the arm to its normal disposition when the arm is inclined in one direction by a load change and for inclining the unit in the other direction to restore the arm to its normal disposition when the arm is inclined in the opposite direction by a load change, whereby



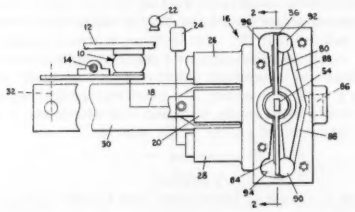
the effective spring and damper constants of the unit are increased and decreased according to the inclination of the arm from its normal disposition in one direction and the other in response to changes in the load and the track being so shaped that each point on the track which causes the effective spring and damper constants to be proportional to the load simultaneously creates just sufficient spring force to support the body with a normal clearance above the road by compensating for changes in the unit length caused by changes in the load.

3,858,903

AIR SPRING SYSTEM AND DAMPED AIR VALVE THEREFOR

Ormond L. Henry, and Don S. Strader, both of Muskegon, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Oct. 29, 1973, Ser. No. 410,465
Int. Cl. F16k *11/02*
U.S. Cl. 280—124 F **12 Claims**



1. In a system for controlling the height of a vehicle with respect to an axle wherein an air spring supports the vehicle on an axle and an air valve controls the flow of air to the air spring and wherein the air valve comprises:

a valve body having an air chamber;

valved conduits in said valve body coupling said air spring with a source of air pressure and coupling said air spring with the atmosphere for exhausting air from said air spring;

means for actuating valves in the valve conduits responsive to changes in the height of said vehicle with respect to said axle, said actuating means including means movable from a neutral position to a valve operating position and returnable to said neutral position;

means for damping the movement of said actuating means away from a neutral position, said damping means including at least one vane in a fluid containing damping chamber with the dimensions of said vane approximating that of said damping cavity portion in which said vane moves to permit slow passage of fluid around said vane upon movement of said vane within aid cavity;

the improvement in said damping means which comprises: an opening and a check valve in said vane to permit flow of fluid through said opening when said vane moves in a first direction and to prevent flow of fluid through said opening when said vane moves in an opposite second direction; and

bypass means in said damping chamber to permit passage of said fluid around said vane when said vane moves toward said neutral position in said second direction;

whereby the movement of said vane is damped in its movement in said second direction from said neutral position but is undamped in its movement in said first direction, and is undamped in its movement in said second direction toward said neutral position.

3,858,904

SAFETY SYSTEMS

Karel Saxl, Sutton Coldfield, England, assignor to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed Jan. 10, 1973, Ser. No. 322,543
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **5 Claims**

1. A vehicle safety belt system comprising a safety belt and an energy absorbing device connected for absorbing energy when a predetermined tension load is placed on the belt, said energy absorbing device including a cylinder having at least one extrusion orifice in one of its ends, a piston rod having an enlarged head at its inner end disposed within the cylinder and having an outer end extending through said extrusion orifice in said one end of the cylinder, the piston rod having at least one slot which in conjunction with the wall of the extrusion orifice defines the effective cross-sectional area through which material is extrudable, an extrudable slug within the cylinder between said enlarged head and said extrusion orifice, means connecting the cylinder to one of said vehicle or said belt, and means connecting the outer end of the piston rod to the other of said vehicle or said belt whereby a predetermined tension load on said belt creates a tension load in the piston rod causing relative axial movement between the piston rod and the cylinder and thereby causing the slug to be extruded through the space between the extrusion orifice and the piston rod.

3,858,905

DEMOUNTABLE SAFETY LADDER WITH HAND RAIL

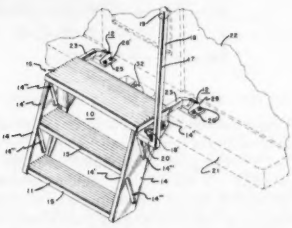
Delbert W. Peebles, 519 11th Ave. Ext., Nampa, Idaho 83651

Filed July 19, 1973, Ser. No. 380,924
Int. Cl. B60r *3/00*
U.S. Cl. 280—163 **4 Claims**

1. A demountable safety ladder comprising:

stairs, including a pair of tall exposed stringers, treads fastened horizontally and transversely between said stringers, and a platform at the uppermost terminal end of said stringers;

hook assemblies fastened to the forwardmost terminal ends of bars issuing forwardly, with respect to said vehicle, from the uppermost terminal end of said stringers at said platform, each of said hook assemblies comprising lugs fastened at the forwardmost terminal ends of said bars, and sockets fastened to a suitable structural member of a vehicle said socket having a mounting plate and a raised hollow enclosure moulded centrally to the uppermost terminal side of said mounting plat, the forwardmost terminal side of said enclosure having an entranceway through which said lug may pass, and a rectilinear slot in the upper walls of said enclosure cut from the rearwardmost side of said entranceway through which said bars carrying said lug may pass; and



a coupling bracket including a pivotally mounted kneeframe having a pair of rectilinearly disposed L-shaped brace members, each having a substantial vertical member and a horizontal member issuing forwardly at the uppermost terminal end of said vertical member each of said brace members pivotally fastened distally below the uppermost terminal end of said stringer and each of said brace members having a contracting face which may make lowermost terminal side of said stringer, the forwardmost terminal ends of said brace members being connected by a transversely disposed bar, and a hitching ball fastened centrally in said transverse bar of said kneeframe to be engageable with a hitching ball provided on said structural member.

3,858,906

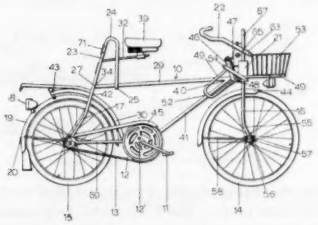
BICYCLE AND SEAT SUPPORT

Arthur D. Wright, Box 1555, Erie, Pa. 16507

Filed July 26, 1972, Ser. No. 275,189

Int. Cl. B62k *19/34*

U.S. Cl. 280—283 **14 Claims**



1. A bicycle seat support adapted to be supported on a bicycle comprising

a column,

said column comprising an elongated column member adapted to be attached at its bottom to a bicycle frame and having spaced notches in at least one side,

an elongated seat support bar having a generally vertical part and a generally horizontal part,

a slider loop having upper and lower loop portions spaced from each other,

said seat support bar having said vertical part received in both said upper and said lower loop portions and disposed between said slider loop and said column,

detent means on said slider loop adapted to engage said notches in said column,

said seat support bar having means thereon for supporting a bicycle seat.

3,858,907

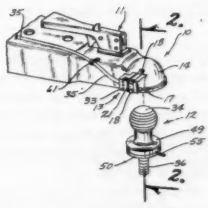
BALL AND SOCKET MECHANICAL AND ELECTRICAL TRAILER HITCH

Leslie T. Van Raden, 622 9th, Allison, Iowa 50602

Filed June 21, 1973, Ser. No. 371,974

Int. Cl. B60d *1/06, 1/08*

U.S. Cl. 280—422 **2 Claims**



1. A hitch assembly for mechanically and electrically connecting a towed vehicle to a prime mover comprising in combination:

a metallic ball unit adapted for mechanical connection to the prime mover and having a ball including at least one spherical segment affixed thereto and insulated electrically therefrom, said unit including a passageway for receiving a first electric conductor from the prime mover and attached to said segment;

a socket unit adapted for mechanical connection to the towed vehicle and having a socket adapted to partially enclose said ball for transmitting mechanical thrust therebetween, said socket having an opening formed therein whereby said segment is exposed;

electrical connection means including at least one second electrical conductor leading to the towed vehicle, said connection means including a housing removably secured to said socket over said opening and having an element connected to said second conductor and resiliently engageable with said segment when said housing is secured, whereby to transmit electric current from said segment to said element during mechanical use of the hitch assembly, and wherein said ball unit includes a plurality of conductive spherical segments affixed to the ball and each segment separated by a non-conducting segment on either side thereof, and said connection means including a plurality of flexible elements, such that each element is engageable with a conductive segment for transmitting current therebetween.

3,858,908

TRAILER HITCH DEVICE

Robert Frank, 6801 W. 127th St., Shawnee Mission, Kans. 66209

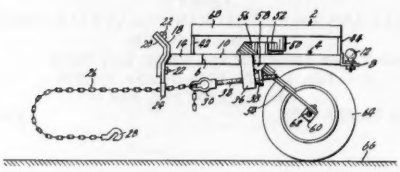
Filed May 29, 1973, Ser. No. 364,907

Int. Cl. B62d *53/04*

U.S. Cl. 280—476 **4 Claims**

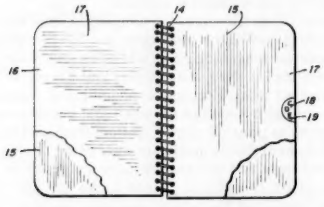
1. A trailer hitch device comprising:

a. a carriage adapted to be disposed intermediate a towing vehicle and a trailer,
b. a ground-engaging wheel carried rotatably by said carriage,
c. attaching means operable to connect the forward end of said carriage to said towing vehicle, and comprising a bumper shoe mounted at the forward end of said carriage, said shoe being forwardly concave whereby to engage the rearwardly convex surface of the rear bumper of a towing vehicle, a flexible tensile member attached at its rearward end to said carriage, extending forwardly of said bumper



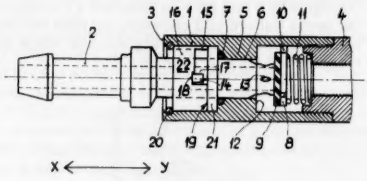
shoe so as to extend forwardly beneath said bumper, and having means at its extended end for securing it to the frame of said towing vehicle, the concavity of said shoe permitting a degree of vertical pivotal movement of said carriage relative to said bumper, and means operable to tighten said tensile member, whereby said shoe is pressed firmly against said bumper, and
d. the towing vehicle element of a hitch coupler mounted on said carriage at the rearward end thereof, whereby to be engageable by the trailer element of said coupler mounted on said trailer.

3,858,909
BOOK INDEXING MEANS
Arthur S. Friedman, 2144 Seneca Dr., West, Merrick, N.Y. 11566
Filed Aug. 7, 1973, Ser. No. 386,373
Int. Cl. B42f *21/12*
U.S. Cl. 283—42 **4 Claims**



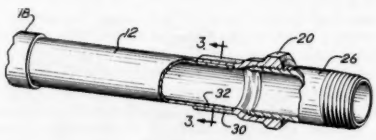
1. In a book having a sequential series of separate sections each constituted of a batch of consecutive leaves made of paper containing parallel fibers all oriented in the same direction, and an indexing leaf made of the same paper as the batch leaves and immediately preceding the first leaf of each batch, the fibers of each indexing leaf being oriented in a direction different from the direction of orientation of the batch leaf fibers, both the batch and indexing leaves having a common turning axis, the direction of orientation of the batch leaf fibers being substantially parallel to said axis and the direction of orientation of the indexing leaf fibers being substantially normal to said axis.

3,858,910
ROTATABLE BAYONNET-TYPE COUPLING
Hans Oetiker, 21 Oberdorfstrasse, Horgen, Switzerland
Filed Apr. 10, 1973, Ser. No. 349,726
Claims priority, application Switzerland, Apr. 10, 1972, 5197/72
Int. Cl. F16l *55/00*
U.S. Cl. 285—84 **10 Claims**



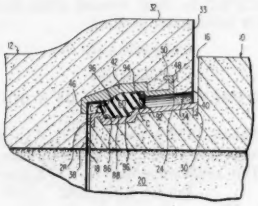
1. A pipe coupling which comprises grooved socket means contained within a housing means and a nipple means provided with locking lugs distributed over the circumference thereof which are received by locking groove means in said grooved socket means when coupling said nipple means to said housing means, said locking groove means each including a first section extending, as viewed from an end face of the housing means on the nipple-side, essentially in the axial direction and a second section adjoining said first section and extending essentially in the circumferential direction and being provided at the end of the circumferential section opposite where the axially extending section adjoins the first section with a notch means directed toward said end face of the housing means, and a locking spring means in said housing means which forces the locking lugs into said notch means in the coupled condition of said nipple means, characterized in that said grooved socket means is freely rotatable about the axis of the housing means and is axially fixed with respect to said housing means, said grooved socket means being provided with an axial opening, and said nipple means extending axially through said axial opening in said grooved socket means.

3,858,911
PIPING SYSTEM
Lee Martin, Elkhart, Ind., assignor to Nibco, Inc., Elkhart, Ind.
Filed Dec. 6, 1972, Ser. No. 312,474
Int. Cl. F16l *55/00, 13/08*
U.S. Cl. 285—173 **7 Claims**



1. A piping system comprising a thin walled steel pipe having a galvanized coating and a plain end, said coating extending along the entire interior and exterior cylindrical surfaces of said pipe, a fitting composed of a copper based metal and having a thin walled cup for receiving the plain end of said pipe, and a bonding material forming a metallurgical bond containing an alloy of zinc and iron between said steel pipe and said copper based metal, the diameter of said pipe ranging from ⅜ inches to 4 inches and the wall thicknesses thereof ranging between 0.022 and 0.095 inches.

3,858,912
CONDUIT JOINT ASSEMBLY
Ray B. Bower, R.D. 8, Greensburg, Pa. 15601
Filed May 16, 1973, Ser. No. 360,817
Int. Cl. F16l *49/00*
U.S. Cl. 285—230 **10 Claims**



1. In a joint assembly of a pair of non-metallic pipe sections arranged in end-to-end relation; one of said pipe sections having a spigot and the other of said pipe sections having socket-defining means; said spigot being disposed in said socket; said spigot having an outer surface terminating in an end face; said socket having an inner surface terminating in a shoulder; a ring-like insert disposed around the outer surface of said spigot, said spigot insert having inner and outer ends and an outwardly opening circumferential groove; a ring-like insert being disposed around the inner surface of said socket, said socket insert having inner and outer ends and an inwardly opening circumferential groove; and a flexible coupling gasket disposed partly in each of said insert grooves in coupling and sealing relationship with said inserts; the improvement wherein:

said socket insert further comprises:

a first circumferentially continuous rib means extending along at least a portion of said socket shoulder radially inwardly of said socket groove;

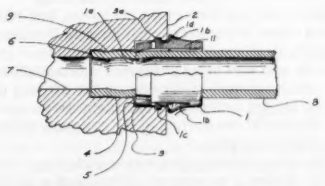
a second circumferentially continuous rib means extending into said socket-defining means, with said socket groove being disposed intermediate said first and second rib means; and

said spigot insert further comprising:

a third circumferentially continuous rib means extending along at least a portion of said spigot end face; and

a fourth circumferentially continuous rib means extending into said spigot with spigot groove being disposed intermediate said third and fourth rib means.

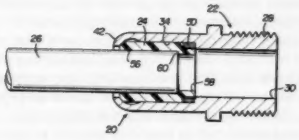
3,858,913
FLUID COUPLING ASSEMBLY
Stephen F. Gallagher, 23 Eisenhower Dr., Norton, Mass. 02766
Filed May 18, 1972, Ser. No. 254,637
Int. Cl. F16l *33/00*
U.S. Cl. 285—238 **3 Claims**



1. A fluid coupling assembly for non-metalic tubing comprising:

a coupling member being a connector having first and second bores therein; the first bore closest to the open end of said member containing an annular groove therein, said second bore dimensioned to slidably fit with outside diameter of tubing to be used and having at least one annular projection formed radially inward, said projection aperture being smaller than the outside diameter of said tubing, the termination of the second bore in a direction away from the first bore having a shoulder therein providing a stop or limit, a tubular member having a converging conical surface on one end, and an aperture therein of a diameter smaller than the outside diameter of said tubing said tubular member being provided with at least one sharp edge adjacent said aperture, said tubular member dimensioned to slidably fit within said said first bore, retaining means cooperatively associated with said tubular member and said groove of first bore for securely retaining said tubular member in said bore, said disengaging means associated with said retaining means for releasing said tubular member readily.

3,858,914
TRANSITION PIPE CONNECTION
Earl K. Karie, Detroit, and Manfred K. Kuttruff, Sterling Heights, both of Mich., assignors to Brass Craft Manufacturing Company, Detroit, Mich.
Filed July 25, 1973, Ser. No. 382,603
Int. Cl. F16l *47/00*
U.S. Cl. 285—238 **3 Claims**

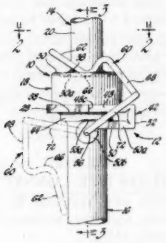


1. A coupling comprising a tubular metal body and a tubular non-metallic plastic insert, said body having a cylindrical bore opening through one end of said body and terminating in an abutment wall facing said opening, said tubular plastic insert received within said bore and abutting said wall, said one body end terminating in an annular lip portion having a reduced wall thickness, the internal diameter of said lip portion being greater than the diameter of said cylindrical bore and also greater in diameter than the external diameter of said insert, said lip portion encircling said bore and extending inwardly to engage one end of said insert, said one insert end having a conical chamfer surface at the radial outer edge, the inner surface of said lip portion adjacent said one insert end radiused outwardly and radially spaced from said insert, terminating in an inwardly radiused portion engaging said chamfer surface of said insert, said one end of said body including said lip portion having a relatively smooth annular uninterrupted exterior surface, said lip portion thereby defining an annular spring means resiliently compressing said plastic insert against said abutment wall and permitting thermal expansion of said insert, said insert having an internal bore adapted to receive a non-metallic plastic pipe to be secured thereto.

3,858,915
SNAP TOGETHER COUPLING WITH INTEGRAL SPRING
Patsy De Vincent, and Herbert D. Clark, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 27, 1974, Ser. No. 455,048
Int. Cl. F16l *37/10*
U.S. Cl. 285—320 **4 Claims**

1. A fluid conduit coupling comprising, in combination, an outer tubular member defining a socket, a tubular plug member slidably received in said socket and being in sealing relation to said socket when fully inserted therein, said socket having a first seal seat for an annular seal ring at the plug receiving end thereof and an external radial flange provided

with a planar surface containing an annular groove therein facing in the opposite direction from said first seal seat, said plug member having an external radial flange portion positioned to provide a second seal seat facing said socket, an annular seal positioned for sealing engagement relative to said first seal seat and to said second seal seat and, a loop spring having primary spaced apart lock segment means and spaced apart secondary lock segment means rotatably secured to said plug member for pivotal movement about an axis relative to said plug member between a first position wherein both said



lock segment means are out of engagement with said socket to a second position wherein said primary lock segment means are engaged in said annular groove of said radial flange in an over-center position relative to said axis whereby said annular seal is compressed in sealing engagement with said first seal seat and with said second seal seat, and an intermediate position between said first position and said second position in which said secondary lock segment means engage said planar surface containing said groove permitting limited axial separation of said tubular plug member relative to said socket.

3,858,916

DOOR LOCK DEVICE

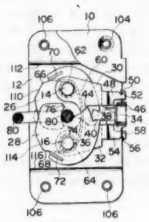
Nozomu Torii, Hekinan, and Minoru Yamanaka, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-City, Aichi-pref., Japan

Filed Dec. 12, 1973, Ser. No. 423,927

Claims priority, application Japan, Dec. 13, 1972, 47-197212

Int. Cl. E05c *3/26*

U.S. Cl. 292—45 **4 Claims**



1. A door lock device, comprising:

a base plate;

a bracket mounted on said base plate;

two shafts fixed to said base plate and said bracket;

one of said shafts being held in common by a first latch member and a first pawl;

the other of said shafts being held in common by a second latch member and a second pawl;

biasing means for maintaining said first and second latch members and said first and second pawls in normal states thereof, respectively;

a striker capable of contact with said first and second latch members so as to move them swingingly against said biasing means;

said first and second pawls being opposed to said second and said first latch members, respectively, for retaining them in the half-latched or the full-latched position; and means for simultaneously releasing said retaining means for said first and said second latch members so as to make them returned to their normal states from said half-latched or full-latched position.

3,858,917

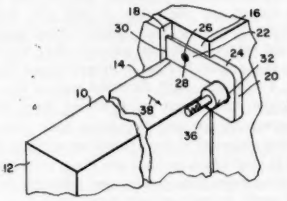
DEVICE TO PREVENT OPENING OF A DOOR OR THE LIKE

Abraham S. Nahon, 1029 Arboretum Rd., Wyncote, Pa. 19095

Continuation-in-part of Ser. No. 234,894, March 15, 1972, abandoned. This application May 10, 1973, Ser. No. 358,848

Int. Cl. E05c *5/02*

U.S. Cl. 292—57 **6 Claims**



1. In a device to prevent the movement of a door from a closed position to an open position, said door having a free edge which is movable in an opening direction relative to a door jamb, the combination of

A. a plate of generally planar configuration,

1. said plate having a first section and a second section,

2. said first section being provided with screw openings for passage of screws,

3. said first section inserting between the free edge of the door and the door jamb and being secured to the jamb by screws inserted through the screw openings,

4. said second section being provided with a locking device opening,

5. said locking device opening having pin retaining means associated therewith to retain a locking pin within the locking device opening; and

B. a locking pin removably engagable within the locking device opening,

1. said pin being equipped with plate engaging means to function with the said pin retaining means,

2. said locking pin being oriented and retained within the path of door travel by the plate to prevent movement of the door in an opening direction when the pin is inserted into the locking device opening,

3. the screws and the locking pin having longitudinal axes and when respectively positioned in locking arrangement, all of the said axis being parallel,

a. the said axes being positioned substantially normal to the movement of the door in the opening direction,

4. the pin retaining means comprising a slot which is formed at one portion of the periphery of the locking device opening,

5. the said plate engaging means including a barrel portion having a peripheral surface and a dimple rising above the surface, the said dimple passing through the slot when the locking pin is inserted into the locking device opening, the plate engaging means further including means to rotate the dimple out of alignment with the said slot.

3,858,918

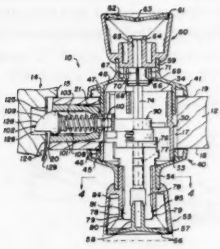
CONVERTIBLE PRIVACY-PASSAGE LOCK SET

Stuart G. McBurnie, Burnaby; William A. W. Jorgensen, West Vancouver, and Michel L. E. Rocher, Vancouver, British Columbia, all of Canada, assignors to Velto Industries Ltd., Vancouver, British Columbia, Canada

Filed June 25, 1973, Ser. No. 373,596

Int. Cl. E05c *1/16*

U.S. Cl. 292—169.15 **16 Claims**



1. A door lock set comprising a tubular housing extendable through a door opening, an end plate secured to each opposite end of the tubular housing to non-rotatably engage opposite faces of the door, a shaft projecting through the tubular housing into aligned openings in the end plates, an outside handle knob secured to one end of the shaft and being rotatably mounted on an adjacent end plate, an inside handle knob rotatably mounted on an adjacent end plate for sliding movement longitudinally of the shaft between in and out positions, a rotor non-rotatably securing the inside handle knob to the opposite end of the shaft and being movable longitudinally with said knob to the in and out positions, a slide block mounted within the tubular housing for sliding movement on an axis normal to the longitudinal axis of the shaft, a latch bolt connected to the slide block and slidably projecting through an opening in the tubular housing for movement relative to an edge of the door between extended and retracted positions, spring means biasing the latch bolt to the extended position, drive means connecting the rotor to the slide block whereby rotation of the shaft in either direction moves the latch bolt towards the retracted position, and locking means engaged only when the inside handle knob is in the in position for interlocking the rotor with the housing and the slide block.

3,858,919

MOTOR VEHICLE DOOR LATCH

Frank Kleefeld, Heiligenhaus, and Gunter Gmeiner, Sindelfingen, both of Germany, assignors to Arn. Kiekert Sohne, Heiligenhaus and Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, both of, Germany

Filed Mar. 19, 1973, Ser. No. 342,804

Claims priority, application Germany, Mar. 7, 1972, 2213190

Int. Cl. E05c *3/26*

U.S. Cl. 292—216 **4 Claims**

1. A door latch comprising;

a coupling body adapted to be mounted on a motor-vehicle doorpost;

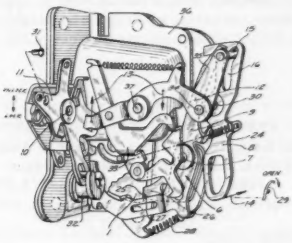
a housing adapted to be mounted on a motor-vehicle door; a locking pawl displaceable on said housing and lockingly engageable with said body;

an operating lever on said housing having a keeper engageable with said pawl and displaceable between an actuated position permitting displacement of said pawl thereby freeing said door from said doorpost and an unactuated position blocking displacement of said pawl thereby securing said door to said doorpost, said lever being formed with a guide surface;

an actuating member pivotal on said housing and formed with a guide slot, said pawl, said layer, and said member being pivotal on said housing about generally parallel axes;

a locking arm displaceable on said housing transverse to said axes;

a link pin fixedly mounted on said arm and displaceable along said slot between a first location therein engageable with said surface and a second location therein wherein engagement with said surface is impossible said pin being displaceable toward and away from said guide surface;



means for displacing said member from a first to a second position with said link pin at said first location engaging said guide surface of said lever and displacing said operating lever into said actuated position and with said link pin at said second location for leaving said lever in said unactuated position; and

locking means connected to said arm for displacing said link pin in either position of said member from said first to said second location for decoupling said member from said lever and for displacing said link pin against said guide surface and forcing said operating lever from its unactuated position to its actuated position.

3,858,920

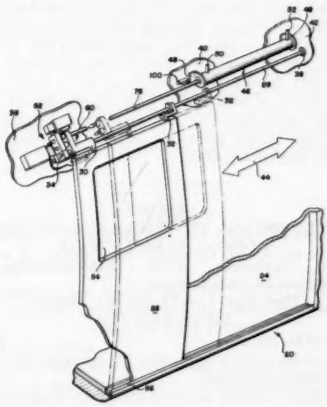
VEHICLE DOOR POSITIONING AND LOCKING ASSEMBLY

Donald Douglas Erickson, Farmers Branch, Tex., assignor to Monocab, Inc., Garland, Tex.

Filed May 31, 1973, Ser. No. 365,414

Int. Cl. E05c *19/00*

U.S. Cl. 292—302 **15 Claims**



1. A vehicle door latching assembly for securing a vehicle door in a closed position on a vehicle cab, comprising: first

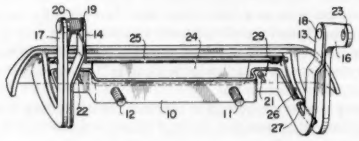
latch means and second latch means, the first latch means including a locking member movable between a latched and an unlatched position, and the locking member having a cam follower surface and a latching surface spaced from said cam follower surface, the second latch means including a carrier member, and a cam member mounted on said carrier member, the cam member having leading and trailing cam surfaces aligned to respectively engage said first means locking member cam follower surface upon relative converging and diverging movements between said first and second latch means for moving said locking member between the latched and unlatched positions, said second latch means further including a latch bolt mounted on said carrier member spaced from said cam member and having a bolt surface mateably engaging the latching surface of said locking member in the latched position.

3,858,921

VEHICLE DOOR HANDLE ASSEMBLY

Nobuyuki Kuki, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya-City, Aichi Pref., Japan

Filed July 27, 1972, Ser. No. 275,896
Claims priority, application Japan, July 28, 1971, 46-56641
Int. Cl. E05c *3/26*
U.S. Cl. 292—336.3 **3 Claims**



1. A door handle safety locking assembly for a vehicle door, which door is normally held in a closed position by a latch mechanism, said assembly comprising:

base means for fixed attachment to the vehicle door;

main handle means for operative association with a latch mechanism of the door, said main handle means being pivotally movable on said base means between a first position and second release position;

auxiliary handle means pivotally mounted on said main handle means and operatively movable by abutment therewith toward the release position;

manually displacable check means displacably connected between said auxiliary handle means and said base means for normally preventing relative pivotal movement of said main handle means between said first and second position, whereby a door latch mechanism is only released to open the door upon a first pivotal movement of said auxiliary handle means followed by a second pivotal movement of both said auxiliary handle means and said main handle means to said second position thereof, said first and second pivotal movements occurring consecutively and continuously.

3,858,922

REMOTE CONTROL APPARATUS FOR OPENING AND CLOSING VEHICLE DOOR

Shigehiro Yamanaka, 1-42, Mitsuyakitadori, Higashiyodogawa-ku, Osaka, Japan

Filed Sept. 5, 1973, Ser. No. 394,463
Int. Cl. E05c *3/00*
U.S. Cl. 292—336.3 **7 Claims**

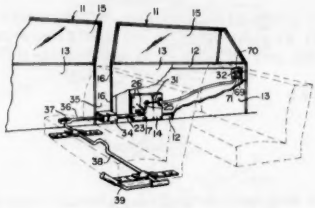
1. A remote control apparatus for opening and closing a vehicle door, comprising:

a first shaft rotatably mounted traversely of the vehicle, an operating lever rigidly connected to one end thereof, an arm rigidly connected to the other end thereof and extending radially therefrom;

a first connecting rod, one end thereof being operatively connected to the free end of said arm and movable in an axial direction;

an actuating means comprising an elongated body having a guide slot, and an elongated slide member movably mounted within the guide slot of said elongated body and capable of extending from said elongated body, the other end of said first connecting rod being in engagement therewith;

a first supporting shaft extending transversely through both of said body and said slide member and slidably received within the guide slot, one end of said slide member being thereby pivotally connected to said connecting rod;



a swinging member pivotally supported for pivotal rotation around a point intermediate its ends by a support means, one end of said swinging member contacting the free end of said slide member and a spring member to said swinging member for biasing said one end of said swinging member against said slide member;

a door locking hook pivotally supported at an intermediate portion thereof and a spring member connected thereto for biasing said hook in a direction for unhooking the door lock;

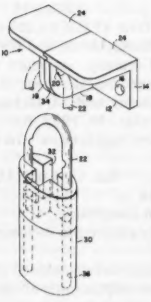
a flexible hook operating shaft, one end operatively connected to the other of said swinging member and the other end connected to an end of said door locking hook.

3,858,923

HIGH SECURITY HASP

Frank C. Bunn, 2004 Priceton Blvd., S.W., Huntsville, Ala. 35801

Filed Oct. 18, 1973, Ser. No. 407,765
Int. Cl. E05c *19/08*
U.S. Cl. 292—281 **3 Claims**



1. A securing device comprising a hasp with a pair of locking bars having openings therein and a padlock with a shackle for secured position engagement with said openings, said hasp and said padlock being disposed to completely cover said shackle and said padlock being disposed to cover said bars in the secured position, said hasp including: a pair of mounting

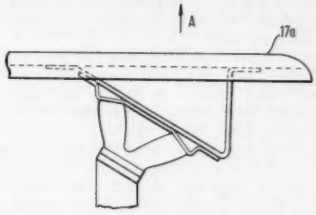
plates for mounting the hasp; a pair of locking bars disposed in side by side relationship to each other and connected in perpendicular relation to said mounting plates; and a pair of horizontal protective plates connected to ends of said mounting plates and said locking bars, each of said protective plates having an edge provided with a lip and a recess whereby when said protective plates are brought together the lip of one edge engages the recess of the opposite edge in an overlapping manner.

3,858,924
TRUCK BUMPER GUIDE
John F. Bores, 27 Baker St., Monroeville, Ohio 44847
Filed July 17, 1973, Ser. No. 380,085
Int. Cl. B60r *19/00*
U.S. Cl. 293—69 **4 Claims**

1. A bumper guide particularly adapted for use with trucks and like vehicles having a bumper with a free end, said bumper guide comprising an upstanding standard, and mounting means along a lower portion of said standard for clamping said standard lower portion to an exterior surface of a bumper free end, said mounting means including adjustable clamp means positioned remotely from said standard for concealment and protection by a bumper end, said mounting means including a pair of vertically spaced mounting members each having at one end a hook portion and at the opposite end a flange, said flanges carrying said clamp means, each flange having an internally threaded bore, and said clamp means being in the form of an externally threaded clamp member adjustably carried by the respective flange.

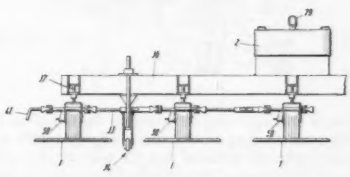
3,858,925
ELASTOMERIC MOUNTINGS
Jan Gaydecki, Leicester, England, assignor to Dunlop Limited
Filed Feb. 22, 1973, Ser. No. 334,909
Claims priority, application Great Britain, Mar. 2, 1972, 9675/72; May 26, 1972, 24869/72
Int. Cl. B60r *19/06*; **E02b** *3/22*
U.S. Cl. 293—88 **16 Claims**

1. A resilient vehicle bumper mounting comprising two discrete leg members of resilient elastomeric material formed integral with each other at one of their ends and arranged in a substantially V-formation, a rigid cross member which maintains the other ends of the leg members in spaced relationship with the other ends being bonded to support surfaces of the cross member which are inclined relative to a plane perpendicular to an axis of symmetry between the leg members, each leg member being contoured along its length to provide a preferential region of bending, and each leg member being shaped and disposed so that when subjected to a load applied



longitudinally of the two leg members the leg members will first deform in a stable manner and then be caused to bend or buckle.

3,858,926
VACUUM LIFTING DEVICE
Ludger Ottenhues, Karlsstr. 24, 4407 Emsdetten, Germany
Filed July 23, 1973, Ser. No. 381,886
Int. Cl. B66c *1/02*
U.S. Cl. 294—64 R **9 Claims**



1. In a vacuum lifting apparatus for lifting articles having an axially symmetrically curved surface, a vacuum lift device comprising: a flexible main plate, a plurality of rigid side-by-side elongated segments carried on said main plate for angular movement relative to each other to define a curved configuration adapted to the curved surface of the article, a plurality of seals associated with said segments and projecting from said main plate, a sealing rim of resilient material projecting from said main plate to engage said article and to form an air seal therewith and encircling said segments and said seals, tie rod means pivotally connected to the outer side of segments at first ends thereof, opposite ends of said tie rod means extending toward a common location from said segments for positioning relative to one another with angular movement of said segments, and means for locking said tie rod means at said common location at given positions to hold said segments at said angular relationships while defining a desired curved configuration.

3,858,927
APPARATUS FOR SIDE PICK UP REFUSE COLLECTION
William H. Sutton, 7400 Smithfield Rd., Forth Worth, Tex. 76118
Division of Ser. No. 297,687, Oct. 16, 1972, Pat. No. 3,786,949. This application Oct. 23, 1973, Ser. No. 408,740
Int. Cl. E04g *21/02*
U.S. Cl. 294—69 R **2 Claims**

1. A trash container for receiving refuse and for use with a side pick up refuse collection vehicle comprising:

a. a bottom;

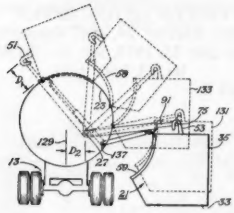
b. rear wall and side walls having adjacent ends connected together and connected with said bottom and extending upwardly therefrom to define a body;

c. a top connected with said rear wall and said side walls;

d. a front wall connected with said bottom and said side walls so as to form an obtuse angle with said bottom such that refuse will be dumped from said container when it is lifted and inverted through an angle α of greater than 90° and less than 180°;

e. upper front door hingedly connected with said top by a first hinge; said upper front door adapted to hang in a normal closed position by gravity and adapted to be swung inwardly manually for deposition of said refuse and to be swung outwardly by the force of gravity when said container is lifted and inverted through said angle α;

f. lower front door hingedly connected with said front wall by a second hinge and adapted to be swung outwardly open by the force of gravity when said container is lifted and inverted through said angle α and to be swung closed when said container is uprighted from its inverted and dump position; said lower front door being normally inclined inwardly from its bottom to its top in its closed position so as to prevent influx of rainwater into said container when left outdoors;



g. a pair of loading hooks mounted on the top of said container; said loading hooks being disposed and spaced apart a sufficient distance that the front to rear vertical plane of the center of gravity of said container is located therebetween; said loading hooks having an opening readily accessible from the front to facilitate attachment of a lifting arm; and

h. a pair of arcuate track engaging means for engaging a pair of tracks on said vehicle during said lifting and inverting of said container; said track engaging means being disposed one on each side of said front door such that said container is properly inverted and emptied regardless of whether the operation is carried out on level terrain or not,

i. said arcuate tracks haing respective terminal portions at their top ends adjacent said first hinge and at their bottom ends adjacent said second hinge; and

j. stop means to limit the swing of said lower front door in its closed position.

3,858,928

SYSTEM FOR PLACING FACTORY PREFABRICATED HOUSING UNITS

C. Robert Gottlieb, Mobile, Ala., and Eugene C. Lewis, Scotch Plains, N.J., assignors to Diamonhead Corporation, Mountainside, N.J.

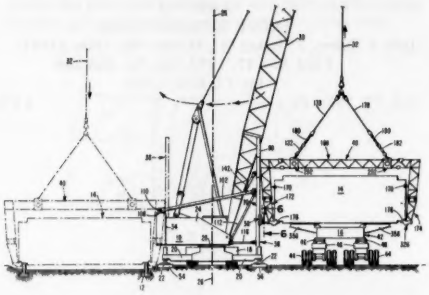
Division of Ser. No. 312,575, Dec. 6, 1972, Pat. No. 3,831,770. This application Jan. 22, 1974, Ser. No. 435,458

Int. Cl. B66c *1/28*

U.S. Cl. 294—81 SF **8 Claims**

1. A portable load spreader adapted to be suspended on a hoist line for handling large, delicate loads such as interiorly finished housing units, said spreader comprising:

a detachable assembly of box-truss components including a pair of transversely spaced longitudinal struts, a pair of longitudinally spaced transverse struts, each of said transverse and longitudinal struts including interconnected spaced upper and lower pairs of tension-compression chords, detachable means rigidly interconnecting opposite ends of said longitudinal struts to said transverse struts to establish a generally rectangular superstructure, a pair of arm members also having interconnected spaced pairs of tension-compression chords, means pivotally suspending a pair of said arm members from each side of said superstructure, one from each end of said transverse struts, said pivotal suspending means detachably connecting one pair of said chords in said arm members to one pair of said chords in said transverse struts, thereby to



restrict pivotal movement of said arms to a single pivotal axis and a pair of parallel truss members detachably but rigidly suspended one from each of said pair of arm members;

linear load engaging and supporting means extending inwardly from each of said truss members continuously along the length thereof; and

means connected between said arms and said superstructure for swinging said arms and said truss members toward and away from each other while maintaining the parallel relation of truss members.

3,858,929

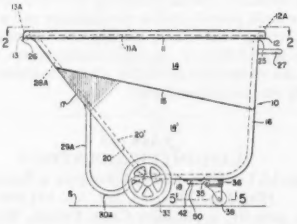
TILT TRUCK FRAME WITH REMOVABLE TUB

Anthony J. Brescia, Winchester, Va., assignor to Rubbermaid Commerical Products, Inc., Winchester, Va.

Filed Mar. 29, 1973, Ser. No. 345,843

Int. Cl. B62b *3/08*

U.S. Cl. 280—47.12 **6 Claims**

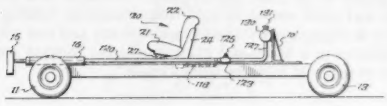


1. In combination, a structural frame and a tub removably supported therein, said frame having an upper rim and at least one component extending downwardly from the front and rear of said rim and having a connecting bottom portion, said tub having a rim flange carried on the rim of said frame and having depending front, rear and bottom walls supported on said frame component, and cooperative latch means on the bottom portion of said frame component and said tub bottom wall for locking said tub in said frame.

3,858,930
SAFETY VEHICLE SEAT SYSTEM AND TRIGGER MEANS FOR THE SAME

Donald A. Calandra, 130 Wellingwood, Williamsville, N.Y. 14221; Vincent Dirubbio, Hances Pt., North East, Md. 21901, and Joseph R. Vallone, deceased, late of East Amherst, N.Y., by Irene S. Vallone, administratrix, 7091 Transit Rd., East Amherst, N.Y. 14051

Filed July 11, 1972, Ser. No. 270,699
Int. Cl. B60r *21/10*
U.S. Cl. 296—65 A **11 Claims**



1. In a vehicle passive restraint system, trigger means comprising:

a. actuator means comprising an actuator member movable from an inactive position wherein said actuator member is spaced out of contact with means for operating said passive restraint system to an active position wherein said actuator member operatively contacts said operating means in a manner causing operation of the passive restraint system and biasing means normally urging said actuator member toward said active position;

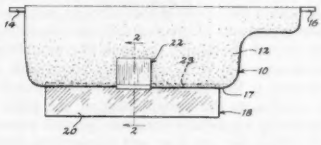
b. control means normally mechanically holding said actuator member in said inactive position spaced out of contact with said operating means and operative to release said actuator member and allow said actuator member to be moved to said active position operatively contacting said operating means; and

c. means for operating said control means to release said actuator member in response to impact with the vehicle, said operating means comprising force sensing means said fluid circuit means coupled to said control means whereby in response to an impact with the vehicle said force sensing means causes a change in pressure in said fluid circuit means for operating said control means to release said actuator member.

3,858,931
CLIP DEVICE FOR VEHICLE GLARE SHIELD

John Van Sickle, 1841 Billington Rd., East Aurora, N.Y. 14052

Continuation-in-part of Ser. No. 875,929, Nov. 12, 1969, Pat. No. 3,697,125. This application Oct. 3, 1972, Ser. No. 294,862. The portion of the term of this patent subsequent to Oct. 10, 1989, has been disclaimed.
Int. Cl. B60j *3/00*
U.S. Cl. 296—97 C **2 Claims**



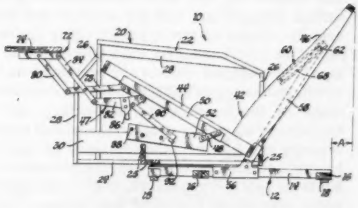
1. In combination with a vehicle sun visor having an opaque body disposed substantially vertically so as to present a transversely extending substantially horizontal lower edge portion; a glare shield comprising a body of transparent glare reducing material having an upper marginal edge portion for disposition in overlapping relation to the lower edge portion of said visor so as to form a downward extension of the sun visor, and

a clip device for holding and maintaining said glare shield stabilized in such overlapping position with respect to the sun visor, said clip device comprising (1) a pair of opposed arms straddling said body of the sun visor and having upper free end portions spaced apart to engage and frictionally grip the body of said sun visor therebetween, (2) a bight portion joining the lower ends of said arms to effect the aforesaid gripping action, said bight portion presenting an upwardly facing seating surface engaging against the lower edge of said sun visor along the width of the clip device and being maintained in such engagement with such lower edge by said gripping action of the arms so as to stabilize the clip device with respect to said sun visor, (3) an external wall surface adjacent the juncture of said bight portion with one of said arms, such wall surface overlapping said lower edge portion of said sun visor and extending transversely across the clip device substantially parallel with said sun visor, and (4) a further wall appended to the exterior side of such one arm near its lower extremity and extending downwardly in opposition to said wall surface and parallel thereto defining a downwardly facing transversely extending channel therewith receiving said upper marginal edge of the glare shield and maintaining it in the aforesaid position with respect to said sun visor.

3,858,932
RECLINING CHAIR ASSEMBLY

Donald Crum, Louisville; McKinley Goff, Middletown, and Edward L. Hampton, Louisville, all of Ky., assignors to Legget & Platt Incorporated, Carthage, Mo.

Filed May 23, 1973, Ser. No. 362,951
Int. Cl. A47c *1/02*
U.S. Cl. 297—85 **13 Claims**



1. In a recliner chair assembly having,

a base,

a body support including a seat and back portion,

a pair of armrests disposed alongside said seat portion,

longitudinal tracks and rollers in said tracks interconnecting said armrests and base to permit said armrests to roll longitudinally with respect to said base,

a recliner linkage interconnecting said armrests and said body support to permit said body support to move between an upright position in which said back portion is upright and said seat portion is approximately horizontal and a reclined position in which said back is inclined toward horizontal and said seat portion is inclined toward vertical, and

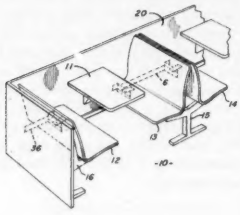
a control means interconnecting said body support and said base, characterized in that said control means includes, at each side of said base, a rearwardly and upwardly projecting bar fixed to each side of said base, a roller projecting from said bar at a fixed point adjacent said back, substantially the entire portion of said bar lying forward of the rear extremity of said back in every position of said back as said back moves between upright and reclining positions, and a track fixed on each side of said back, each said track lying generally in the plane of said back and receiving one of said projecting rollers to cause said body support to swing from upright to reclined position without

substantial rearward movement of said back as said armrests are moved forward relative to said base.

3,858,933
UNIVERSAL MOUNTING BRACKET FOR LAMINATED SEATING BOOTHS

Richard G. Koehring, Burnsville, Minn., assignor to Waymar Industries, Inc., Burnsville, Minn.

Filed July 2, 1973, Ser. No. 375,330
Int. Cl. A47b *39/00*
U.S. Cl. 297—158 **3 Claims**



1. Apparatus for securing a booth to a wall, comprising:

a U-shaped main support bracket having its base adapted for securing to the wall and having two spaced vertical slots adjacent said wall for adjusting the level of said bracket, and having legs extending under the seat portion of the booth;

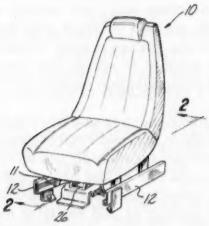
a pair of L-shaped brackets, each attached to an extended leg of the U-shaped bracket and offset upwardly along said bracket leg, and each having mounting holes in a surface adjacent said wall and an upper and lower notch near its outward extremity for providing clearance;

a pair of inclined T-brackets, each attached to an extended leg of the U-shaped bracket and bearing on an L-bracket notch, and having an angle of incline to correspond to the shape of the booth seat undersurface, said inclined bracket surface rigidly attached to said seat undersurface; whereby the upward offset distance of said L-shaped brackets correspond to the distance required to raise the booth seat portion upper surface to a level higher than the upper edge of said U-shaped main support bracket.

3,858,934
VEHICLE SEAT SAFETY SYSTEM

Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed July 19, 1973, Ser. No. 380,912
Int. Cl. B60r *21/10*
U.S. Cl. 297—216 **6 Claims**

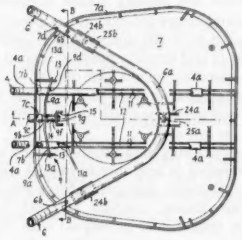


1. A vehicle seat safety system comprising in combination vehicles floor tracks mounted in spaced horizontal positions to receive and guide rollers therein, a seat mounted for adjusted longitudinal positions and including rollers attached thereto and disposed within said vehicle floor tracks to maintain the seat along a horizontal plane during movements thereof, and a yieldable attenuating restraint device for moving the seat, said restraint device including an attenuating linkage having first and second ends, said first end being pivotally connected to said seat, a slidable adjusting device mounted on a track on the vehicle floor intermediate said spaced tracks and means connecting said slidable adjusting device to said second end of said attenuating linkage, power means for moving said slidable adjusting device, said power means including a pinion shaft, and said intermediate track including a fixed rack on which the pinion of the shaft operates roller means on said pinion shaft, and guide means for said roller means for holding the pinion in engagement with said rack whereby said seat will be maintained in a horizontal plane during the forward movement of said seat resulting from a crash.

3,858,935
CHAIR

Leonard J. Pask, 7 Melrose Ave., Mitcham, England

Filed Oct. 24, 1972, Ser. No. 299,904
Claims priority, application Great Britain, Oct. 22, 1971, 49289/71
Int. Cl. A47c *3/00*
U.S. Cl. 297—353 **12 Claims**



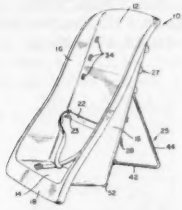
1. A chair including a seat part and a backrest part, both said seat part and said backrest part being formed from two shell-like mouldings of synthetic plastics material, each shell-like moulding comprising an expansive surface at least partly bounded by a peripheral rim portion, the mouldings being secured together with their rim portions directed towards each other to form a cavity therebetween, the chair further including a pillar arrangement supporting the backrest part from the seat part, and having a generally upright portion extending into the cavity within the backrest part and cooperating directly with the shell-like mouldings of said part to permit sliding adjustment of said backrest part relative to the upright portion in the longitudinal direction of the upright portion, a first adjustment mechanism located and substantially entirely concealed within the cavity in the backrest part, enclosed by the expansive surfaces of the two-shell-like mouldings of said part, and carried directly by the shell-like mouldings of said part, said mechanism being releasably cooperable with said upright portion to lock the backrest part in selected adjusted positions relative to the upright portion, the pillar arrangement also having a generally horizontal portion extending into the cavity within the seat part and cooperating directly with the shell-like mouldings of the seat part to permit sliding adjustment of the horizontal portion relative to the seat part in the longitudinal direction of the horizontal portion, and a second adjustment mechanism located and substantially entirely concealed within the cavity in the seat part, enclosed by the expansive surfaces of the two shell-like mouldings of the seat part, and carried directly by the shell-like mouldings of the seat part, said second adjustment mechanism being releasably cooperable with said horizontal portion to lock the latter in selected adjusted positions relative to the seat part.

3,858,936

INFANT CARRIER

Donald L. Gerken, Columbus, Ind., assignor to Cosco, Inc., Columbus, Ind.

Filed Mar. 5, 1973, Ser. No. 338,404
Int. Cl. A47c 7/62
U.S. Cl. 297—377 3 Claims



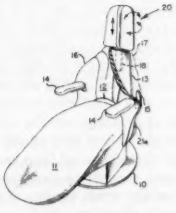
1. An infant carrier, comprising an infant-supporting shell having a back wall connected at its lower end to a forwardly projecting seat wall, a pair of laterally spaced rows of vertically spaced sockets projecting rearwardly from the rear face of said back wall, each of said sockets having a pair of side walls interconnected by top and bottom walls, said bottom wall having an opening formed therein, said shell back wall having openings formed therein in alignment with said bottom wall openings, a pair of laterally spaced rows of vertically spaced rearwardly open clips projecting rearwardly from said back wall rear face, and a support wire having a pair of legs interconnected at their upper ends to rearwardly projecting fingers selectively received in the bottom wall openings in a pair of said sockets, the lower ends of said legs terminating in forwardly projecting runners interconnected at their forward ends by a transverse bight selectively received in a pair of said clips.

3,858,937

DENTAL CHAIR AND ADJUSTABLE HEAD SUPPORT MECHANISM THEREFOR

Floyd E. Norris, Renton, Wash., assignor to Arnold's Auto Upholstery, Inc., Seattle, Wash.

Filed May 18, 1973, Ser. No. 361,591
Int. Cl. A47c 1/10, 3/00, 7/38
U.S. Cl. 297—408 4 Claims



1. An adjustment mechanism linking a head support and means for attachment to the back support of a chair comprising:

an elongated linking member having two parallel annular openings extending therethrough near each end,

slots in the linking member extending from the outer surface thereof into communication with each of the annular openings, each of the slots allowing the internal diameter of each of the annular openings to be reduced by compression of the linking member adjacent the slots;

an open-ended channel extending through the linking member essentially transverse to the axis of each of the annular openings and communicating with the slots and a segment of each of the annular openings;

annular pins received in each of the annular openings, each pin having an external diameter slightly less than the internal diameter of the respective annular opening in the uncompressed state, allowing free rotation thereof, each pin having a channel extending around the outer circumference thereof;

means connecting one of the annular pins to the head support and the other annular pin to the means for attachment to the back support;

a pin extending through the open-ended channel of the linking member communicating with the respective channels in the annular pins to retain the annular pins in place in the linking member;

retaining means at one end of the pin to retain the pin in place in the open-ended channel; and

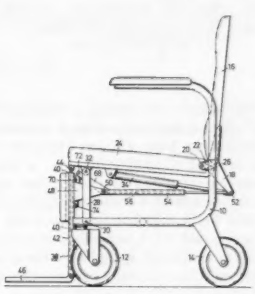
cam means connected to the opposite end of the pin for exerting tension on the pin relative to the linking member to compress the linking member, reducing the diameter of the annular openings and frictionally engaging the annular pins to lock them against rotation.

3,858,938

CHAIR HAVING LEG AND FOOT SUPPORTING MEANS

Ove Kristensson, Stockholm, and Gunnar Olof August Ridder, Bromma, both of Sweden, assignors to Landstingens Inkopscentral, Solna, Sweden

Filed Nov. 28, 1972, Ser. No. 310,015
Claims priority, application Sweden, Dec. 2, 1971, 15473/71
Int. Cl. A47c 7/50, 1/02
U.S. Cl. 297—429 4 Claims



1. A chair having a frame supported by two front chair legs and two rear chair legs and provided with a back support, a seat and a leg supporting means, the latter being arranged at the front end of the seat and capable of being pivoted from a substantially vertical starting position to a substantially horizontal supporting position, the leg support means having a foot support adjustably connected thereto, characterized in that the leg supporting means has an upper and a lower portion, said lower portion being freely displaceably connected with said upper portion so that it can be displaced longitudinally relative to said upper portion and its pivot point between determined movement limits, said leg support having attached to the upper portion thereof a rearwardly extending arm, operating means arranged beneath the seat, the rear end of said arm being pivotally connected to said operating means, said operating means being capable of being moved axially forwards and backwards to raise and lower the leg support respectively between its vertical and horizontal positions, said operatiang means having an outwardly projecting arm having a pivot point, a substantially vertical link having one end connected to said pivot point, the other end of said link being pivotally connected to a point on the lower portion of the leg

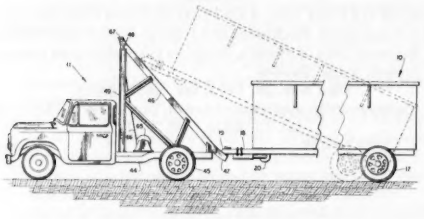
support, whereby raising of the leg support causes the first named end of the link to be moved with the operating means and cause axial movement of the lower portion away from the upper portion, said back support of said chair being pivotally mounted at its lower end and collapsible rearwardly, the lower end of the back support having a bracket forming a pivot arm relative to the pivot point of the back support, a telescopic connector joining said bracket with the pivot point of the arm attached to the upper portion, whereby collapsing movement of the back support causes the leg support to be raised to its support position, and during movement of the leg supporting means from its starting position to the support position said lower portion will be displaced relative to the upper portion to an outer limit position, thereby providing an extension of the leg supporting means so that the foot support does not impede stretching of the legs of a person sitting in the chair.

3,858,939

SOLID WASTE COLLECTION AND RECOVERY SYSTEM

Ronald L. Bond, Valdosta; E. C. Daughdrill, Lake Park, and Henry T. Brice, Valdosta, all of Ga., assignors to Swacars, Inc., Valdosta, Ga.

Filed July 9, 1973, Ser. No. 377,752
Int. Cl. B60p *1/14*
U.S. Cl. 298—8 R **6 Claims**



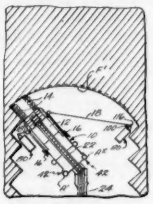
1. In a towing vehicle for towing a trailing vehicle, said towing vehicle having a rear axle, a track mounted over said rear axle and extending from a lower elevation to an upper elevation with respect to said rear axle, a hitch member mounted for movement along said track and operative for towing interconnection with a trailing vehicle, motive means connected to said hitch member for selectively moving the hitch member along said track between said lower and upper elevations, wherein said track including a lower support surface along which said hitch member is movably received for load bearing support, and a rearward support mounted in rearward confronting relation with said hitch member to receive trailing forces imparted to the hitch member by a connected trailing vehice, said track additionally comprising an elongate channel having a floor for said lower support surface and a wall in spaced apart relation from said floor, an elongate slot extending the length of said wall, said hitch member having a bearing portion captivated for reciprocable travel within said channel and a hitch portion connected to said bearing portion and extending through said slot to a location outside of said channel for said towing interconnection, said wall comprising said rearward support for said bearing portion, said elongate channel being mounted on said towing vehicle extending diagonally from said lower elevation at a point located behind said rear axle to said upper elevation at a point located in front of said rear axle, said bearing portion of said hitch member including at least one roller for rolling traverse along said floor, a roller carrier having a pair of side members extending from alongside said roller to a position spaced above said roller, a support joined with said side members and extending above said roller and spaced apart from said elongate slot within said elongate channel, and said hitch portion including a member connected to said support and extending through and without said elongate slot for unimpaired movement therealong in response to movement of said bearing portion.

3,858,940

METHOD OF ADVANCING A CONTINUOUS MINING MACHINE AND APPARATUS THEREFOR

Joseph V. Lagowski, Madscott, W. Va., assignor to Wilcox Manufacturing Co., Inc., Raleigh, W. Va.

Filed May 30, 1973, Ser. No. 365,061
Int. Cl. E21c *29/08*
U.S. Cl. 299—18 **13 Claims**



1. A continuous mining machine for removing coal from a coal seam having a shortwall face extending concavely arcuate from a side wall defining one end thereof to another side wall defining the other end thereof about an axis spaced outwardly thereof, said machine comprising:

a. an elongated frame,

b. power driven cutting and conveying means carried by said frame in forwardly disposed relation thereto and operable during relative movement of said frame with respect to said face to cut a room section in the coal seam inwardly of the face thereof while continuously conveying the cut coal outwardly of the face,

c. conveyor means operatively associated with said frame for continuously moving the coal rearwardly away from the mine face which is cut and conveyed outwardly of the mine face during the formation of said room section by said cutting and conveying means,

d. first means for effecting a pivotal movement of said frame and said cutting and conveying means from a position adjacent one end of said face across the face to a position adjacent the other end thereof about an axis adjacent the rear portion of the frame spaced from the axis of the face both in a direction toward the face and in a direction toward said other end thereof to progressively remove a section of coal from the seam which extends inwardly of the face a distance which increases progressively in the direction of movement across the face and to progressively define an advanced face which extends concavely arcuate about said spaced axis of pivotal movement, and

e. second means for effecting a pivotal movement of said frame and said cutting and conveying means across the advanced face from said other end to a position adjacent said one end about an axis adjacent the rear portion of the frame spaced from the axis of said advanced face both in a direction toward the advanced face and in a direction toward said one end thereof to progressively remove a section of coal from the seam which extends inwardly of the advanced face a distance which increases progressively in the direction of movement across the advanced face and to progressively define a further advanced face which extends concavely arcuate about the spaced axis of the last mentioned pivotal movement,

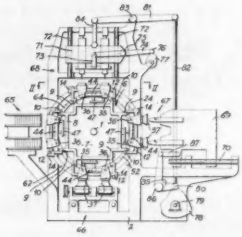
said first pivotal movement effecting means including a first vertically extensible and retractable pivot unit carried by the rear end portion of said frame at the side thereof adjacent the other end of said face for extensible engagement between the mine roof and floor and retractable disengagement between the mine roof and floor, said second pivotal movement effecting means including a second vertically extensible and retract-

able pivot unit carried by the rear end portion of said frame at the side thereof adjacent the one end of said face for extensible engagement between the mine roof and floor and retractable disengagement between the mine roof and floor.

3,858,941
AUTOMATIC DRUM TYPE MACHINE FOR THE MANUFACTURE OF BRUSHES

Leonel P. Boucherie, Rumbeke, Belgium, assignor to Firma G.B. Boucherie, naamloze vennootschap, Izegem, Belgium

Filed Mar. 6, 1973, Ser. No. 338,636
Claims priority, application Belgium, Apr. 18, 1972, 78224
Int. Cl. A46d *3/06*
U.S. Cl. 300—3 **7 Claims**



1. A machine for producing brushes of the type wherein the bristles are introduced in one face of a brush body (**37**), said machine including at least:

an indexable drum (**6**) rotatable about a predetermined axis (**1**) and comprising at least two angularly spaced frames (**12**) each carrying at least one holder (**35, 36**) for a brush body (**37**);

a drilling station adjacent to said drum (**6**) and comprising means (**68**) for drilling holes into said brush body disposed adjacent said drilling station;

a filling station adjacent to said drum (**6**) and comprising means (**67**) for introducing bristles into the holes in said brush body drilled at said drilling station;

further station means adjacent to said drum and comprising further means (**65**) to feed new brush bodies to the holders and (**66**) to trim and clean the bristles introduced in the brush bodies;

first control means (**13–32**) to impart to said brush bodies (**37**) in said drilling and filling stations a lengthwise movement parallel to said drum axis (**1**) and to prevent this movement in said further station means;

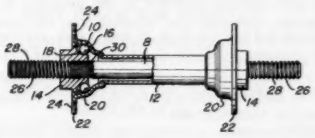
and second control means (**33, 34, 38–61**) to impart to said brush bodies in said drilling and filling stations a transverse movement perpendicular to said drum axis (**1**) and to prevent this movement in said further station means.

3,858,942
HUB AND AXLE ASSEMBLY

Robert Frank Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Maysville, Ky.

Filed Jan. 5, 1973, Ser. No. 321,464
Int. Cl. B60b *27/00*
U.S. Cl. 301—105 B **8 Claims**

1. A wheel hub and axle assembly for a bicycle or the like, comprising: an elongate axle having opposite screw-threaded end portions, each said screw threaded end portion including a portion of continuous, uninterrupted thread at the outer end of the axle with an inner group of thread convolutions thereof mashed and deformed at the peaks thereof to define a selected zone of repose along an inner portion of the threaded axle end; an elongate tubular hub mounted coaxially upon the axle for relative rotation therebetween, said hub having opposite ends each provided with an annular bearing race; ball bearings in rolling contact with said bearing races; an internally threaded cone member rotational upon each threaded end portion of the axle for advancement to the selected zone of repose at which the cone member is in contact with the bearing balls and impresses said balls against a respective bearing race with a predetermined adjusted force of contact; threaded adjustment of said cone member into the selected zone of

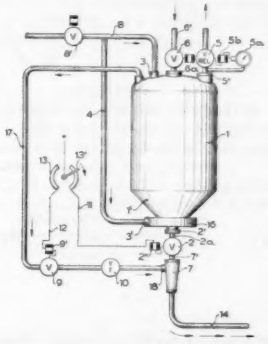


repose at least partially restoring and shaping said deformed thread convolutions to a fit with the internal threads of the cone member which is precise, tight and resilient within the limits of inherent resiliency of the axle material, for releasably locking the cone member upon the axle at said selected zone of repose, to maintain said bearing balls in properly adjusted relation.

3,858,943
APPARATUS FOR THE PRODUCTION AND PNEUMATIC CONVEYING OF A CONTINUAL FLOW OF PORTIONS OF LOOSE MATERIAL

Fritz-Rainer Bose, Braunschweig; Kurt Hornei, Stockheim Bei Braunschweig, and Wolfgang Essmann, Braunschweig, all of Germany, assignors to MIAG Muehlenbau und Industrie GmbH

Filed Mar. 13, 1973, Ser. No. 340,829
Claims priority, application Germany, Mar. 16, 1972, 2212611
Int. Cl. B65g *53/12*
U.S. Cl. 302—26 **7 Claims**



1. In a pneumatic conveying device for conveying slugs of loose material with air buffers therebetween,

a storage container,

an inlet for loose material leading through the top of said storage container,

a valve controlling the supply of loose material through said inlet,

an inlet for air under pressure leading into said storage container,

a valve controlling the flow of air into said storage container,

a pressure regulating valve regulating the pressure of air in said storage container,

a feeder line for loose material leading from the bottom of said storage container and having a feeder valve therein,

a feeder starting chamber downstream of said feeder valve connected with said storage container through said feeder valve,

a loose material conveyor line leading from said feeder starting chamber,

a pressure line for air under pressure leading from said storage container to said feeder starting chamber and supplying air under pressure from said storage container to said starting chamber at the pressure of air in said storage container and assuring that air under pressure first flows through said storage container before passing to said starting chamber,

an air control valve in said pressure line controlling the flow of air under pressure from said storage container to said starting chamber, and

means alternately operating said feeder valve and said air control valve, for admitting slugs of loose material into said feeder starting chamber and forcing slugs of loose material from said feeder starting chamber along said conveyor line with air buffers between the slugs passing along said conveyor line.

3,858,944

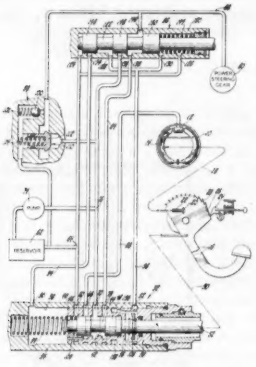
VEHICLE BRAKE ACTUATING SYSTEM

Michael A. Pocobello, Warren; Harold E. Croswell, Sterling Heights, and Harold E. Riisager, Rochester, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 10, 1973, Ser. No. 377,950

Int. Cl. B60t *13/58*

U.S. Cl. 303—2 **3 Claims**



1. An actuating device for a vehicle brake having a hydraulic actuator and a mechanical actuator and comprising, a housing, a valve spool connected in lost motion relation with and operating the mechanical actuator upon predetermined movement of the valve spool, a piston slidable in the housing and having a central annulus slidably receiving the valve spool, means for holding the piston in a normal stationary position in the housing, port means in the piston and the housing cooperable with the valve spool to channel operating pressure fluid to the hydraulic actuator upon movement of the valve spool relative the piston, means acting between the valve spool and the piston to carry the valve spool with the piston upon movement of the piston from the normal position, and port means in the housing introducing pressure fluid to move the piston from the normal position whereby the predetermined movement is imparted to the valve spool and the mechanical actuator is operated.

3,858,945

DEVICE FOR EFFECTING A VOLUME CHANGE IN A HYDRAULIC ANTISKID BRAKE SYSTEM

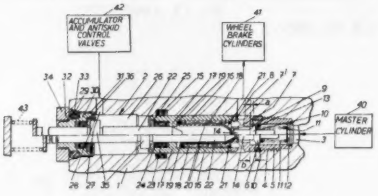
Juan Belart, Walldorf, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 18, 1973, Ser. No. 324,692

Claims priority, application Germany, Jan. 22, 1972, 2202996

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **4 Claims**



1. A device for effecting a volume change in a hydraulic antiskid brake system comprising:

a one piece housing having a longitudinal axis;

a blind bore having an opening at one end thereof disposed in said housing coaxial of said housing;

a displacement piston assembly disposed in said bore subjected to control pressure which is dependent upon measured antiskid wheel acceleration values and braking pressure of said brake system, said piston assembly having several parts, a first of said parts extending through said opening at said one end of said bore and a second of said parts providing first pressure application surfaces for said control pressure to move said piston assembly in a first direction toward the other end of said housing and providing second pressure application surfaces for said brake pressure to move said piston assembly in a second direction opposite to said first direction;

a separating valve having a valve body and a valve seat disposed within said bore adjacent said other end of said housing, said valve body being in a cooperating relationship with said piston assembly;

a radially elastic bushing disposed in said opening of said one end of said bore, said bushing being sealed to the outer surface of said first of said parts of said piston assembly and the inner surface of said bore; and

a mechanical spring disposed in a cooperating relationship with said first of said parts to maintain said piston assembly in its neutral position in case of failure of said control pressure;

said second part including

a sleeve disposed in a slidably sealed relation with the inner surface of said bore, one end of said sleeve providing said first pressure application surface and the other end of said sleeve providing said second pressure application surfaces, said sleeve providing desired volume expansion;

said first part including

a stem extending through said opening of said one end of said bore into said sleeve, said stem being slidably sealed to the inner surface of said sleeve; and

another of said several parts including

a cap supported in said sleeve having a shape corresponding to the shape of said stem, an end of said cap adjacent said other end of said housing being in contact with said valve body; and further including

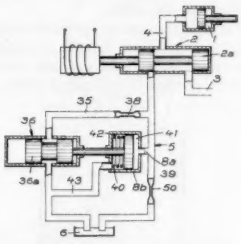
a ring shaped space formed between the inner surface of said bore and the outer surface of said stem adjacent said one end of said sleeve to receive said control pressure.

3,858,946

MECHANISM FOR THE ANTI-LOCKING BRAKING OF A WHEEL OF A MOTOR VEHICLE

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Mar. 7, 1973, Ser. No. 339,010
Claims priority, application France, Mar. 9, 1972, 72.8304
Int. Cl. B60t 8/12
U.S. Cl. 303—21 F 9 Claims



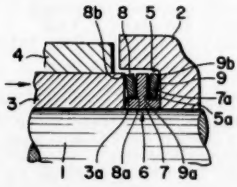
1. Mechanism for the anti-locking braking of a wheel of a motor vehicle, comprising a source of fluid under pressure controlled by the driver, fluid pressure brake operating means connected to the brake of said wheel, a valve controlled by a control device detecting the dynamic state of the wheel and able to connect the brake operating means selectively to the source of fluid under pressure and to a first exhaust conduit, a first flow-limiter being arranged in said first exhaust conduit and an accumulator whose variable internal volume is determined by the position of an element movable therein under the effect of fluid pressure against an elastic member tending to render said internal volume minimal, said accumulator being interposed in said first exhaust conduit between the controlled valve and said first flow-limiter, characterized in that an auxilliary exhaust conduit is branched from said frist exhaust conduit between the controlled valve and the first flow-limiter and wherein an auxilliary flow-limiter is located between the controlled valve and the end of the auxilliary conduit and wherein closing means is connected to the moving element of the said accumulator to close said auxilliary exhaust conduit when said internal volume is greater than a given value.

3,858,947

DUST SEAL FOR ENDLESS TRACKS OF A TRACTOR

Hiroyuki Kaizaki, and Takeshi Kato, both of Hirakata-shi, Osaka-fu, Japan, assignors to Kabushi Kaisha Komatsu, Seisakusha, Japan

Filed Jan. 5, 1973, Ser. No. 321,311
Int. Cl. F16j 15/38
U.S. Cl. 305—11 7 Claims



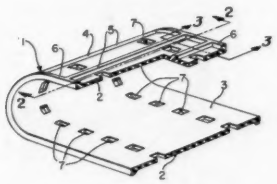
1. A dust seal for endless tracks of a tractor composed of a pin, a first link secured to said pin and having an annular recess, a bushing rotatably engaged with said pin and projected at one end into the recess of said first link to form a counter bore portion, and a second link secured to said bushing, comprising a pair of resilient members disposed in the counter bore portion, and a spacer means contacted with the end surface of said bushing on one side and with the inside surface of the recess of said first link at the other side with both contacts in a linear manner at a point on the projection of the bushing.

3,858,948

BELT TRACK FOR VEHICLES

David W. Johnson, and Ralph W. Kell, both of Lincoln, Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 30, 1973, Ser. No. 355,604
Int. Cl. B62d 55/24
U.S. Cl. 305—35 EB 20 Claims



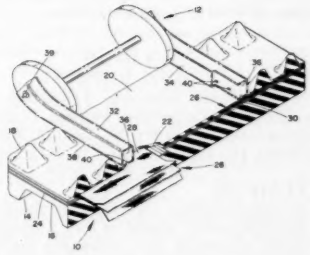
1. A flexible endless belt of reinforced elastomeric material for use on a track vehicle, said belt comprising a body having an inner surface and an opposite outer ground-contacting surface and including a plurality of stiffening members embedded therein extending transversely across the width of the belt at least substantially at right angles to the longitudinal direction of the belt and disposed in at least two spaced apart planes with respect to the longitudinal centerplane of the belt, each said stiffening member comprised of a continuous noncompressible monofilament of a synthetic material to impart transverse rigidity to the belt, said monofilament throughout at least a majority of its length being in direct contact with the elastomeric material of the body of the belt.

3,858,949

ENDLESS TRACK AND SLIDE THEREFOR

Paul E. Russ, Sr., Englewood; Donald R. McComber, and Philip M. Patterson, both of Littleton, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 279,163, Aug. 9, 1972, Pat. No. 3,815,960.
This application Oct. 26, 1973, Ser. No. 410,125
Int. Cl. B62d 55/22
U.S. Cl. 305—35 EB 3 Claims



1. An endless track of the integrally molded polymeric material type for use with the slide bar suspension system of a track laying vehicle, and having a tread portion defined of an outer surface, means for receiving a drive means from an

inner surface, a tensile and transverse reinforcement, and wherein the improvement comprises:

an insulating material disposed in the track near and shrouding longitudinally at least part of the track inner surface, said insulating material being thermally stable at least generally 300° F. above the disintegration temperature of the polymeric material.

3,858,950

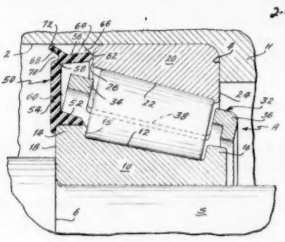
SEALED BEARING

Dennis L. Otto, Malvern, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Feb. 26, 1973, Ser. No. 335,511

Int. Cl. F16c *1/24*

U.S. Cl. 308—187.1 **4 Claims**



1. A sealed tapered roller bearing for use between a shaft and a housing having a bore therein; said bearing comprising: a cup sized to fit in the housing bore and having an inwardly presented tapered raceway and a front face at the large diameter end of the tapered raceway; a cone sized to fit over the shaft and having an outwardly presented tapered raceway located opposite the cup raceway, the cone further having a thrust rib located at and projecting beyond the large diameter end of the cone raceway; tapered rollers interposed between the cup and cone and having their tapered side faces engaged with the tapered raceways and their large diameter end faces abutting against the thrust rib; and an elastomeric seal having a base extended over and bonded directly to the thrust rib of the cone, a primary sealing lip engaged with the front face of the cup, and an outwardly directed web interposed between and connected to the base and the primary sealing lip, the primary sealing lip extending generally axially from the web toward the cup front face and having a first sealing surface engaged with the cup front face and a second sealing surface presented toward, but normally set slightly inwardly from the housing bore, the second sealing surface being adapted to engage the housing bore upon yielding of the elastomeric seal as the result of an increase in pressure within the bearing, whereby a barrier to the passage of lubricants is created across the space between said cup and cone.

3,858,951

TOWEL DISPENSER

Holger Rasmussen, Kilchberg, Switzerland, assignor to Georgia-Pacific Corporation, Portland, Oreg.

Continuation-in-part of Ser. No. 239,126, March 29, 1972, abandoned. This application Mar. 30, 1973, Ser. No. 346,360

Int. Cl. B65h *19/00*

U.S. Cl. 312—38 **8 Claims**

4. A towel dispensing apparatus comprising:

a dispensing roller around at least a portion of which a length of toweling from a toweling supply passes, said dispensing roller being rotatable by said toweling as said toweling is dispensed from said apparatus,

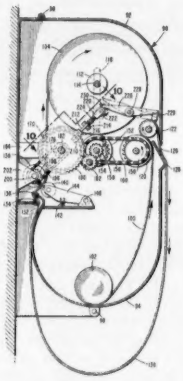
a primary soiled toweling take-up roll upon which the soiled toweling is wound,

a soiled toweling drive roller for rotating said primary soiled toweling take-up roll, said soiled toweling drive roller being driving coupled to said dispensing roller and rotatable therewith, whereby rotation of said dispensing roller during dispensing of toweling causes rotation of said soiled toweling drive roller and thereby said primary soiled toweling take-up roll,

an auxiliary soiled toweling take-up roller engageable with said soiled toweling in advance of said primary soiled toweling take-up roll,

motor means drivingly coupled to said auxiliary soiled toweling take-up roller for selectively rotating said auxiliary soiled toweling take-up roller,

a pinch roller adjacent to and in opposed relationship with said dispensing roller, said length of toweling passing between said dispensing roller and said pinch roller and around at lest a portion of said pinch roller,



sensing means responsive to the passing of the trailing end of the toweling from the supply of toweling for operating said motor means to rotate said auxiliary soiled toweling take-up roller to take up the trailing end of the length of toweling into said apparatus, said sensing means comprising an annular groove in said pinch roller and a finger overlying said annular groove and urged theretoward, said finger normally being separated from said annular groove by the presence of said length of toweling around said pinch roller but being movable into said annular groove upon the passing of the trailing end of said toweling around said pinch roller, and

locking means operated by said sensing means for locking said motor means, said locking means comprising stop means carried by said motor means and means operated by said finger engageable with said stop means.

3,858,952

CONTINUOUS TOWEL DISPENSER

Erwin B. Bahnsen, Oakbrook, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah

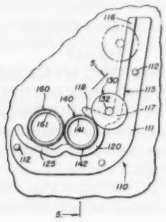
Filed Sept. 4, 1973, Ser. No. 393,922

Int. Cl. B65h *19/00*

U.S. Cl. 312—38 **18 Claims**

1. A towel dispenser of the continuous type comprising a housing having associated therewith a loop of toweling that extends from a source of clean toweling along an exit path to an exposed position accessible to a user an thence along a return path into said housing to storage for used toweling, support structure mounted on each side of said housing and providing a ramp and a journal structure and a bearing surface, a storage roller shiftably and rotatably movable on said ramps in said housing for accumulating thereon a roll of used toweling, drive roller structure freely rotatably supported on said journal structures in said housing in contact with the used toweling roll for rotating the used toweling roll and said stor-

age roller, a pinch roller freely rotatably supported on said bearing surfaces in said housing adjacent to said drive roller structure and movable toward and away therefrom, clean toweling from the source thereof passing upwardly between said drive roller structure and said pinch roller and over said pinch roller and downwardly into the loop of toweling, tension on the loop of toweling urging said pinch roller along said bearing surfaces against the toweling between said pinch roller



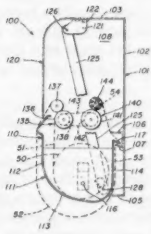
and said drive roller structure and urging said drive roller structure into said journal structures and against the used toweling roll, downward pulling on the loop of toweling causing feeding of clean toweling from the source thereof into the loop of toweling and rotation of said pinch roller and said drive roller structure and said storage roller to accumulate the used toweling thereon during shifting and rotating movement of said storage roller to maintain a predetermined amount of toweling in the loop of toweling.

3,858,953

TOWEL DISPENSER

Erwin B. Bahnsen, Oakbrook, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah

Filed Oct. 1, 1973, Ser. No. 401,982
Int. Cl. B65h *19/00*
U.S. Cl. 312—38 **17 Claims**



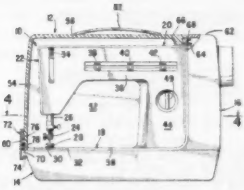
1. A towel dispenser of the continuous loop type comprising a housing having associated therewith a loop of towel than extends along an exit path from a clean towel supply within said housing into an exposed use position exteriorly of the housing accessible to a user and thence along a return path to a soiled towel storage position within said housing, towel dispensing mechanism in said housing for dispensing a length of clean towel from the clean towel supply into the toweling loop along the exit path and into use position exteriorly of the housing when the accessible portion of the towel loop is pulled by a user, take-up mechanism in said housing for taking up soiled towel from the towel loop along the return path and into the soiled towel storage position within the housing, time-stop mechanism in said housing for stopping said dispensing mechanism and said take-up mechanism after the dispensing of a predetermined length of clean towel and thereafter holding said mechanisms in the stopped condition for a predetermined period of time, and free-wheeling mechanism within said housing having a towel dispensing condition wherein said time-stop mechanism is normally operative and a free-wheeling condition wherein said time-stop mechanism is prevented from operation, whereby when said free-wheeling mechanism is placed in the free-wheeling condition thereof a user can continuously withdraw clean towel from the clean towel supply to facilitate servicing of the towel dispenser.

3,858,954

COMBINATION SEWING MACHINE HOUSING AND CARRYING CASE

George C. Hetterich, Saint Petersburg, Fla., assignor to The Singer Company, New York, N.Y.

Filed Feb. 27, 1973, Ser. No. 336,295
Int. Cl. H01m *39/38*; **H02k** *13/00*; **D05b** *77/00*
U.S. Cl. 312—244 **1 Claim**

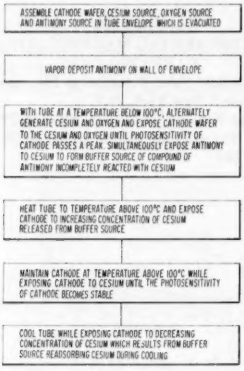


1. A sewing machine carrying case comprising, in combination a sewing machine housing and a removable rigid jacket adapted to cooperate in an installed position with the housing to conceal the sewing instrumentalities; said housing including a base having a work-support; a standard upstanding at one end of the base; a bracket arm extending from the standard below the upper end thereof and overlaying said work support; means defining front and rear slideways on the work support; said jacket comprising a unitary structure having a front wall, a rear wall spaced from said front wall, an end wall connected to one end of each of said front and rear walls, and a top interconnected to the top of each of said front, rear and end walls; the other of each of said front, and rear walls being open and spaced from the other; said front and rear walls each having lower spaced apart edges slidably receivable on a respective one of said front and rear slideways; a portion of said standard being recessed from the base at the front and rear thereof by an amount substantially equal to the thickness of the front and rear walls, the exterior surface of said walls being constructed such that when said jacket is in the installed position said work support is enclosed and substantially smooth planar surfaces are formed with the exterior surface of the front wall and the adjacent exterior surfaces of said base and standard, and substantially smooth planar surfaces are formed with the exterior surface of said rear wall and the adjacent surface of said base and standard, and substantially smooth planar surfaces are formed with the exterior surface of said end wall and the adjacent exterior surface of said base, and substantially smooth planar surfaces are formed with said top wall and the adjacent exterior surface of the upper end of said standard; latch means comprising first cooperative latching members on the top wall and the standard above the bracket arm, and second cooperative latching members on said end wall and the adjacent exterior surface of said base for securing said jacket to said housing; and a carrying handle mounted on the top wall.

3,858,955
METHOD OF MAKING A III-V COMPOUND ELECTRON-EMISSIVE CATHODE

Alfred Hermann Sommer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,746
Int. Cl. H01j *9/18*
U.S. Cl. 316—19 **7 Claims**


ASSEMBLE CATHODE WAFER, CESIUM SOURCE, OXYGEN SOURCE AND ANTIMONY SOURCE IN TUBE ENVELOPE WHICH IS EVACUATED
VAPOR DEPOSIT ANTIMONY ON WALL OF ENVELOPE
WITH TUBE AT A TEMPERATURE BELOW 100°C, ALTERNATELY GENERATE CESIUM AND OXYGEN AND EXPOSE CATHODE WAFER TO THE CESIUM AND OXYGEN UNTIL PHOTOSENSITIVITY OF CATHODE PASSES A PEAK, SIMULTANEOUSLY EXPOSE ANTIMONY TO CESIUM TO FORM BUFFER SOURCE OF COMPOUND OF ANTIMONY INCOMPLETELY REACTED WITH CESIUM
HEAT TUBE TO TEMPERATURE ABOVE 100°C AND EXPOSE CATHODE TO INCREASING CONCENTRATION OF CESIUM RELEASED FROM BUFFER SOURCE
MAINTAIN CATHODE AT TEMPERATURE ABOVE 100°C WHILE EXPOSING CATHODE TO CESIUM UNTIL THE PHOTOSENSITIVITY OF CATHODE BECOMES STABLE
COOL TUBE WHILE EXPOSING CATHODE TO DECREASING CONCENTRATION OF CESIUM WHICH RESULTS FROM BUFFER SOURCE READSORBING CESIUM DURING COOLING

1. A method of making a III-V semiconductor compound cathode, comprising the steps of:

mounting a III-V semiconductor compound cathode wafer in an envelope which is evacuated; then

exposing the cathode at a first temperature, below 100°C, to cesium until the photosensitivity of the cathode has passed a peak; then

raising the temperature of the cathode to a second temperature, above 100°C, while simultaneously exposing the cathode to an increasing concentration of cesium; then

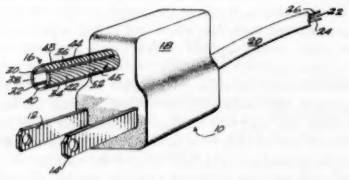
maintaining the cathode at said second temperature while exposing the cathode to cesium, until the photosensitivity of the cathode becomes stable; then

lowering the temperatures of the cathode while simultaneously exposing the cathode to a decreasing concentration of cesium.

3,858,956
GROUND PRONG FOR AN ELECTRICAL PLUG

Lewis B. Garrett, 1020 W. 47th St., Hialeah, Fla. 33012

Filed Nov. 21, 1973, Ser. No. 418,074
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 P **6 Claims**

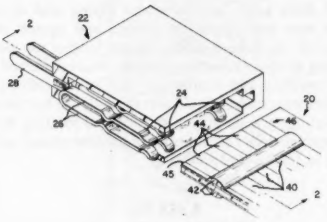


1. An electrical plug including an insulating main body portion having a first end with a pair of current-carrying prongs and the ground prong, extending outwardly therefrom, for reception in a conventional three-prong receptacle and a second end having a three-wire conduit extending outwardly therefrom, the prongs and conduit including inner end portions, fixed relative to the main insulating body portion thereof with the three wires being connected therein with the respective prongs, said ground prong comprising an elongated member having an outer surface with a plurality of spaced apart, outwardly extending ridges thereon, said ground prong being of a generally thin walled tubular configuration and longitudinally slotted substantially along its exposed length, to define a resilient prong, said prong being provided with said ridges which extend generally radially outwardly therefrom, said resiliency allowing said ground prong to compress radially as it engages a socket, substantially along the exposed length thereof.

3,858,957
ELECTRICAL CONNECTING MEMBERS REQUIRING LOWER INSERTION AND RETRACTION FORCES AND PROVIDING FOR LOW CONTACT WEAR

Robert George Harwood, Mechanicsburg, and Gilbert Douglas Ferdon, Hummelstown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 27, 1973, Ser. No. 392,153
Int. Cl. H05k *1/07;* **H01r** *13/54, 13/62*
U.S. Cl. 339—17 L **2 Claims**



1. An improved pair of mating connecting members each having contact areas for interconnecting electrical conductors; said members being of a type capable of being individually mounted for engagement and disengagement along a path which is generally parallel with the longitudinal axis of said members; at least one of said members being normally biased to a disengaged position and to provide a predetermined contact force at said contact areas in a generally transverse direction when said members are engaged; said improvement comprising:

surfaces associated with each of said members cooperating during engagement to perform a camming action to deflect said one of said connecting members against said biasing to cause it to pivot about one end of said one of said members to maintain a first of said contact areas which is on said one of said members disposed from the other of said members until said members are substantially fully engaged, said surfaces being aligned to maintain a second of said contact areas which is on said other of said members away from said one of said members until said members are substantially engaged, said surface associated with said other of said members being disposed along said axis of said other of said members at a location which is more remote from said one of said members than said second contact area so that during said engagement said one of said members generally overlies said second contact area without making contact therewith prior to any said deflection of said one of said members from said disengaged position,

said camming action being applied to a region of said one of said members which is more remote from said one end of said one of said members than said first contact area; and

said biasing of said one of said members causing said one of said members to be more resistent to a deflecting force applied at said first contact area than at said region,

said one of said connecting members comprising a metallic, electrically conductive cantilever with said biasing in-

cluding natural resilience of said cantilever against deflection and said surface associated with said cantilever is located on its curved extended end which includes said region,

said other of said connecting members comprising a conductor path of a printed circuit board and said surface associated with said conductor path is a cam bar mounted on said board and extending transversely across said conductor path,

whereby the insertion force during engagement is lessened by causing said deflecting force to be applied at said region rather than at said first contact area.

3,858,958

METHODS AND APPARATUS FOR FORMING ELECTRICAL CONNECTIONS

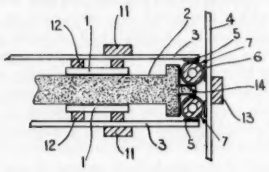
Dennis Davies, Marple, England, assignor to International Computers Limited, London, England

Filed Oct. 29, 1973, Ser. No. 410,598

Claims priority, application Great Britain, Oct. 31, 1972, 50040/72

Int. Cl. H01r *13/54*; **H05k** *1/04*

U.S. Cl. 339—17 LM **2 Claims**



1. An electrical connector for establishing electrical connections with a group of circuit terminations including

a substantially cylindrical core of elastomeric material having two ends;

a plurality of rings each in the form of a hollow cylinder having an interior wall, the plurality including:

a number of flexible thin-walled electrically conductive rings all lying intermediate the ends of the core and being spaced apart axially therealong; and

a further pair of rings, one at each end of the core, the rings of the pair each extending beyond the respective end of the core to form with the core a locating recess at each end thereof;

means securing the rings to the core including an adhesive layer to bond a part of the cylindrical surface of the core to the interior walls of the rings; and

means for supporting the core including a frame arranged to engage with the locating recesses at each end of the core, the frame being positioned with respect to that group of circuit laminations with which connection is required, to maintain alignment of the conductive rings with the terminations of the group respectively.

3,858,959

TEST SOCKET FOR STUDDED SEMI CONDUCTORS

Edward S. Arnold, Oshawa, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,391

Int. Cl. H01r *13/50*, *13/62*

U.S. Cl. 339—74 R **1 Claim**

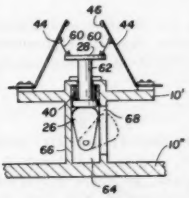
1. A test socket for receiving the stud of a studded semiconductor for testing comprising:

a hollow electrically nonconductive structure having a top horizontal opening through which the stud extends;

four equidistantly disposed upwardly and inwardly extending inclined contact arms in the structure, said arms being connected in common to a binding post;

four electrical contacts in the structure, each secured on the inside of the upper end of a corresponding arm; and

manually operated means in the structure, actuated after said stud is disposed vertically downward in the center of a space bounded by the arms to increase the amount of inward inclination of the arms until said contacts engage



the stud, said means including a plate disposed horizontally in the space, spring wire securing said plate to said arms, a horizontal shaft rotated by an arm extending at right angles thereto, and cams on the shaft which produces relative motion between said arms and the plate, whereby lowering the plate relative to the arms increases said inward inclination.

3,858,960

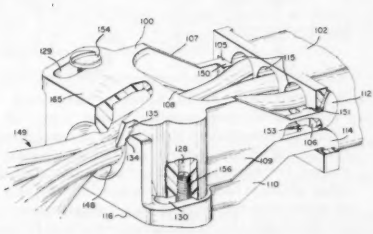
STRAIN RELIEF MEANS FOR ELECTRICAL CONNECTORS

John Philip Kunkle, Harrisburg, Pa., and Robert E. Smith, Hackettstown, N.J., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 4, 1973, Ser. No. 367,059

Int. Cl. H01r *13/58*

U.S. Cl. 339—103 **11 Claims**



1. Strain relief means for conductors secured within a connector comprising:

said connector constructed to define therein first, second and third aperture means, with said second aperture means being positioned in-between said first and third aperture means;

said conductors extending out through said second aperture means from their secured points within said connector;

first and second clamping elements each constructed to have a pair of legs with a foot-like member on each leg; the two legs of each pair of legs being spaced apart a distance equal to the distance between said first and third aperture means to enable said foot-like members to be inserted into said first and third aperture means and to enable said clamping elements to be rotated about the junctions between their legs and the said foot-like members attached thereto;

said first and second clamping elements being so positioned that the said pair of legs attached thereto extend through said first and third aperture means, with the foot-like elements on one pair of legs extending in a direction opposite to the pair of foot-like elements on the other pair of legs to enable said first and second clamping elements

to pivot away from each other about the junction between said legs and said foot-like elements;

said first and second clamping elements each being configured to form a variable size aperture therebetween when pivoted together;

said variable size aperture being variable to accommodate conductors of various cross-sectional areas passing therethrough; and

securing means for securing said clamping elements together in various degrees of proximity to provide for various sizes of said variable size aperture.

3,858,961

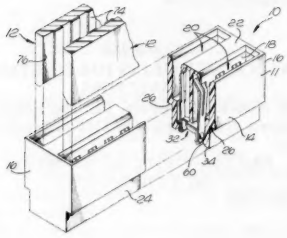
PRINTED CIRCUIT BOARD CONNECTOR

David S. Goodman, Orange, and Harold J. Prow, Jr., Costa Mesa, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 6, 1973, Ser. No. 367,519

Int. Cl. H01r *3/00*

U.S. Cl. 339—176 MP **3 Claims**



1. A printed circuit board connector comprising:

an insulated housing member having a pair of rows of contact compartments therein, the compartments in said rows being longitudinally aligned with each other with the aligned compartments being in communication with each other adjacent their lower portions to provide a plurality of interconnected pairs of said compartments;

a pair of printed circuit board receiving slots formed in said housing member opening at the top thereof and each communicating with a corresponding one of said rows of compartments;

openings extending through the bottom of said housing communicating with each of said interconnected pairs of compartments;

a unitary contact positioned in each of said interconnected pairs of said compartments and insertable therein through a corresponding one of said openings, each said contact being formed with a pair of spring contacting portions each positioned in a respective compartment of said interconnected pair of compartments, said spring contacting portions extending into said slots to engage conductive layers on printed circuit boards inserted into said slots whereby said layers are electrically interconnected by said contact; and

each said contact is formed with a downwardly and outwardly extending integral spring tab lying below its corresponding slot, the lower end of said tab engaging an upwardly facing shoulder formed on said housing member to releasably retain said contact in said interconnected pair of compartments whereby said contact may be removed from said compartments through the corresponding opening thereof.

3,858,962

ELECTRICAL CONTACT SOCKETS WITH INCLUNED ELASTIC WIRES AND IN METHODS FOR THEIR MANUFACTURE

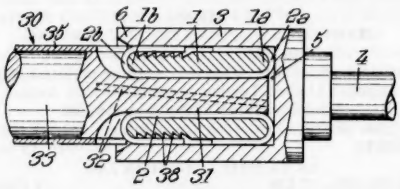
Francois Robert Bonhomme, Saint-Cloud, France, assignor to Connectronics Corporation, New York, N.Y.

Filed Dec. 15, 1972, Ser. No. 315,328

Claims priority, application France, Dec. 17, 1971, 71.45613

Int. Cl. H01r *13/24*

U.S. Cl. 339—256 **9 Claims**



1. Electrical connector socket, for plug and socket assemblies, which socket comprises in combination an inner rigid tubular element having an outer wall, a series of resilient conducting wires, each having ends carried by respective ends of said tubular element so as to extend obliquely to the longitudinal axis of said tubular element in a position where the transverse cross-section of the space between the wires has limited area, resilient pressure, contact engagement with said plug as the plug is inserted into said tubular element, each said wire having each of its ends hooked around the corresponding ends respectively of said tubular element and being straight when not in engagement with said plug, and an outer, integral, tubular part coaxially surrounding said tubular element, having a smooth inner surface and having an inner diameter slightly greater than the outer diameter of said tubular element and of a length a little greater than the length of said tubular element, the two ends of each said wire being crimped, by means of the smooth inner wall of said tubular part and the outer wall at the ends of the tubular element, said tubular part being open at one end and closed at the other end by a transverse wall, said outer wall of said inner ridge tubular element being provided with a plurality of essentially annular gripping projections, at least over its portion in the neighbourhood of the open end of the tubular part for gripping the wires against movement relative to the tubular element.

3,858,963

TRANSVERSE MODE SELECTION IN LASERS FOR HOLOGRAPHY

Lance W. Riley, Burbank, Calif., assignor to Apollo Lasers Inc., Los Angeles, Calif.

Filed Mar. 20, 1974, Ser. No. 452,951

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **13 Claims**

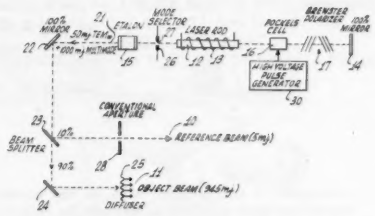
1. For use in an interferometric technique utilizing a laser for producing light output generally along an optical axis, transverse mode selection means, comprising:

a first opaque mode selector disposed within the laser and along the optical axis of the laser, said mode selector having an aperture at the axis small enough to allow lasing only in a uniphase mode, and having an outer dimension selected to allow multimode lasing around said first mode selector without interference with the uniphase lasing through said aperture;

beam splitting means for dividing the laser output from said first mode selector into a first beam and a second beam; and

a second opaque mode selector located in the path of said first beam and having an aperture small enough to pass

energy only in the uniphase mode and an outer dimension large enough to prevent transmission of multimode energy;



whereby said first beam is limited to contain only uniphase energy, and said second beam utilizes both uniphase and multimode output from the laser to provide a high-energy source.

3,858,964

LIGHT-ABSORBING SILICATE GLASS FOR FIBRE-OPTICAL ELEMENTS

Gertraud Agnes Anna Piesslinger, and Hubertus M. J. J. Kunnen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 224,747, Feb. 9, 1972, abandoned, which is a continuation of Ser. No. 4,318, Jan. 20, 1970, abandoned. This application Mar. 12, 1973, Ser. No. 339,719

Claims priority, application Netherlands, Jan. 22, 1969, 6901020

Int. Cl. G02b *5/14*; **C03c** *13/00, 3/04*

U.S. Cl. 350—96 B **2 Claims**

1. In a fibre-optical element which is built up from a bundle of fibres comprising a transparent core portion having a high refractive index, a transparent cladding portion having a low refractive index and a light-absorbing portion, said light-absorbing portion being an improved glass consisting, in % by weight, of:

SiO_2	50–70		CaO	0– 5	
B_2O_3	0–25		MgO	0– 8	
Li_2O	0– 2	combined	BaO	0– 5	
Na_2O	0–15	5–20	Fe_2O_3	0–10	combined
K_2O	0–10		V_2O_5	0–10	5–15
Al_2O_3	2– 4		As_2O_3	0– 2	

3,858,965

FIVE LAYER ANTI-REFLECTION COATING

Haruki Sumita, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

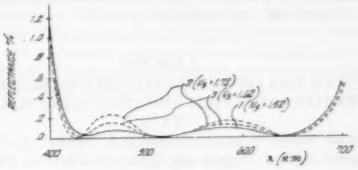
Continuation-in-part of Ser. No. 304,140, Nov. 6, 1972, Pat. No. 3,781,090. This application Oct. 15, 1973, Ser. No. 406,569

Claims priority, application Japan, July 10, 1972, 47-68903

Int. Cl. G02b *5/28*

U.S. Cl. 350—164 **12 Claims**

1. A multi-layered anti-reflection coating, for use with a substrate to reduce reflectance of light, comprising at least five layers of which a first layer furthest from the substrate has an optical thickness of a preselected design wavelength, λ_o, in the range of $0.260\ \lambda_o > N_1d_1 > 0.230\ \lambda_o$ and an index of refraction in the range of 1.35 to 1.62; a second layer has an optical thickness in the range of $0.600\ \lambda_o > N_2d_2 > 0.400\ \lambda_o$ and an index of refraction in the range of 1.95 to 2.30; a third layer has an index of refraction in the range of 1.56 to 1.90; a fourth layer has an index of refraction in the range of 1.35 to 1.62, and a fifth layer has an index of refraction in the range



of 1.35 to 1.90; the optical thickness of at least one of the third, fourth and fifth layers is in the range of $0.500\ \lambda_o > N\,d > 0.250\ \lambda_o$ while the optical thickness of at least another layer of the third, fourth and fifth layers is in the range of $0.250\ \lambda_o > N\,d > 0.060\ \lambda_o$ wherein N refers to the index of refraction and d refers to the physical thickness of the layer.

3,858,966

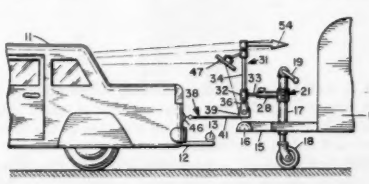
APPARATUS FOR FACILITATING TRAILER HITCH ELEMENT ALIGNMENT

Percival Davis Lowell, Jr., 505 Talbot Hall Rd., Norfolk, Va. 23505

Filed Jan. 2, 1974, Ser. No. 429,782

Int. Cl. G02b *5/10*

U.S. Cl. 350—307 **10 Claims**



1. Apparatus for facilitating the substantially vertical alignment of a draft vehicle carried trailer hitch element with a cooperating trailer vehicle carried trailer hitch element, comprising:

a device for linearly interconnecting, within the limits thereof, said draft vehicle and said trailer vehicle, said device including a component interconnected with said trailer vehicle and operationally positioned above said trailer vehicle carried trailer hitch element on a substantially vertically disposed axis passing substantially centrally through said trailer vehicle carried trailer hitch element, said component being operationally rotatable with respect to said substantially vertically disposed axis, said device further including an element interengaged with said component thereof having an extremity operationally most remotely positionable from said component of said device interconnectable with the rear of the body of said draft vehicle at a point on the centerline thereof, said element of said device operationally substantially linearly and operationally substantially rigidly extending from the vicinity of said point on the rear of the body of said draft vehicle towards said component of said device regardless of variations in the distance between said draft vehicle and said trailer vehicle; and

a mirror interconnected with said trailer vehicle and operationally positioned above said device for linearly interconnecting, within the limits thereof, said draft vehicle and said trailer vehicle, said mirror operationally substantially facing in the direction of said point on the rear of the body of said draft vehicle and being adapted to pro-

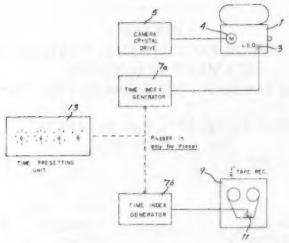
vide the operator thereof with a reflected view of at least a portion of said trailer vehicle carried trailer hitch element, said mirror also being operationally rotatable with respect to said substantially vertically disposed axis together with said component of said device for linearly interconnecting, within the limits thereof, said draft vehicle and said trailer vehicle.

3,858,967

METHOD AND APPARATUS FOR PROVIDING INDEXING CODES ON MOVIE FILM AND ASSOCIATED MAGNETIC TAPE

Leopold Henry O'Donnell, Montreal, Quebec, Canada, assignor to Her Majesty the Queen in Right of Canada as represented by the Secretary of State, Ottawa, Canada

Continuation-in-part of Ser. No. 320,306, Jan. 2, 1973, abandoned. This application June 19, 1973, Ser. No. 371,492
Claims priority, application Canada, Dec. 29, 1972, 160257
Int. Cl. G03b *41/00*
U.S. Cl. 352—38 **12 Claims**



1. A method for recording indexing information on a movie film strip in a movie camera by means of at least a single light beam which exposes portions on the edge of the film to produce said indexing information;

said camera having a frame rate and a corresponding frame period during operation of the camera;

said method comprising;

driving the light source with a cyclical power generator having a period equal to at least two frame periods, turning on the light source for a period of no more than one frame period during each period of the generator, the light source being turned off for a period equal to at least one frame period during each period of the generator;

whereby each bit of indexing information is produced on one, or no more than two, adjacent frames of the film strip;

and wherein the indexing information is coded in binary code.

3,858,968

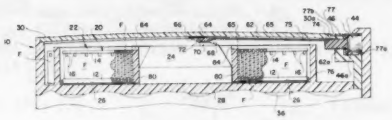
FILM CARTRIDGE

Stephen H. Miller; Robert C. Sutliff; Archie J. Tucker; Neil S. White, and Bruce L. Elle, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1973, Ser. No. 336,142
Int. Cl. G03b *23/02*
U.S. Cl. 352—78 R **6 Claims**

1. In a film cartridge having walls defining a supply chamber for a roll of film or the like having an axis and a tendency to become stepped in an axial direction, the improvement comprising:

a slidable member mounted on said cartridge and positioned at least partially in the cartridge, said member being movable with respect to one of the chamber-defining walls along a path between a first position and a second position, the one wall being substantially perpendicular to and flexible along the axis of the film roll, and means located along the path of motion of said member for effecting the flexing of the one wall in response to



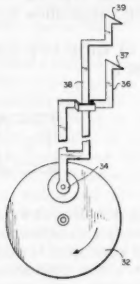
movement of said member from its first position to its second position and thereby expand the chamber in the axial direction.

3,858,969

WIDE SCREEN FORMAL SUPER 8 MOTION PICTURE SYSTEM

Saul Wernick, 340 E. 61st St., New York, N.Y. 10021

Filed July 31, 1973, Ser. No. 384,305
Int. Cl. G03b *1/22*
U.S. Cl. 352—192 **3 Claims**



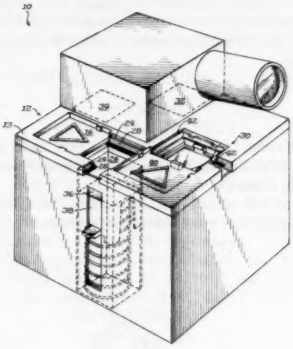
1. A super 8 motion picture system which is compatible with a conventional Super 8 cartridge comprising:

a. a pull down claw means comprising a body member having first and second claw members integral with said body member, said claw members spaced longitudinally on said body member and separated from each other by a distance equal to one half the distance between sprocket holes of a Super 8 film for engaging a film in said cartridge and pulling said film wherein each claw member pulls the film the distance of one half of a conventional Super 8 frame;

b. drive means directly coupled to said pull down claw means, said drive means comprising a drive wheel and means mounting said body member eccentrically on said drive wheel such that for each revolution of said drive wheel said claw means travels a distance equal to one half the distance between sprocket holes of a Super 8 film and returns; and,

c. shutter means coordinated with said pull down claw means for exposing said film after it has been pulled by one of said claw members, whereby each frame of said film covers one half of the area of a frame in a conventional Super 8 film thereby doubling the running time of the film and creating a wide format frame.

3,858,970
CONTINUOUS SHOW SLIDE PROJECTOR
John Daniel Collier, III, Dunwoody, Ga., assignor to Bell & Howell Company, Chicago, Ill.
Continuation of Ser. No. 179,776, Sept. 13, 1971, abandoned. This application Dec. 21, 1973, Ser. No. 427,192
Int. Cl. G03b *23/02, 23/06*
U.S. Cl. 353—21 **1 Claim**

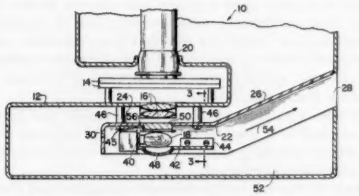


1. Improvements in a slide projector including a housing and a slide transport means for accepting slides and transporting same to a projection station in said housing, the housing having a supply station at which slides may be introduced into and removed from said transport means, the transport means being arranged to transport a slide from said supply station to said previewing station, and to transport a slide from said previewing station to said projection station and out of said projection station toward said supply station, the improvement comprising:

magazine coupling means at said supply station for receiving a magazine adapted to contain a first plurality of slides to be fed by said transport means to said previewing station and said projection station; and

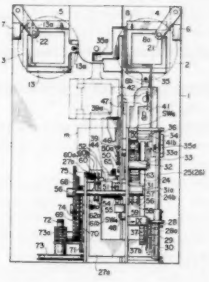
magazine coupling means at said previewing station for receiving a magazine adapted to contain a second plurality of slides to be fed by said transport means to said projection station other than when slides are transported from said supply station to enable transporting continuously to said projection station slides alternatively introduced serially at said supply station and at said previewing station.

3,858,971
HEAT CONVECTION COOLING SYSTEM FOR OPTICAL READOUT AND DISPLAY DEVICE
David K. Studley, Sunnyvale, Calif., assignor to Quantor Corporation, Mountain View, Calif.
Filed Aug. 16, 1973, Ser. No. 389,049
Int. Cl. G03b *21/16, 21/00*
U.S. Cl. 353—61 **12 Claims**



1. Apparatus for cooling a light source in an optical readout and display device, said apparatus comprising a downwardly opening channel having a heat collecting portion disposed over the light source and an upwardly inclined portion extending from said level portion, said heat collecting portion including a glass portion above the light source allowing passage of light from the light source upwardly through the channel, said channel being constructed of thermally conducting material for the absorption of heat generated by said light source, the channel including surfaces for the transfer of heat to air in the channel and a resulting convection movement of cooling air from adjacent the light source along the inclined portion to a point remote from the light source.

3,858,972
SLIDE PROJECTOR
Tomio Hirosawa, and Susumu Otsuka, both of Tokyo, Japan, assignors to Cabin Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 16, 1972, Ser. No. 307,206
Claims priority, application Japan, Nov. 18, 1971, 46-92620
Int. Cl. G03b *23/04*
U.S. Cl. 353—118 **1 Claim**



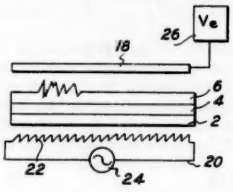
1. A slide projector comprising a pair of lamp housings having projection lamps, a magazine adapted to be slidably inserted below said lamp housings, a pair of slide carriers arranged so as to be respectively moved between first positions matching the light paths from said pair of lamp housings and second positions just above said magazine, a feed pinion meshing with said magazine, a first rotatable cam member engaged with said slide carriers in order to move said pair of slide carriers alternately, a second rotatable cam member connected to said feed pinion for rotating said feed pinion by a pre-determined amount, a pushing plate disengageably connected to said second cam member for moving a slide into one of said slide carriers from said magazine after said slide carrier is moved to its second position, and a returning plate connected to said second cam member for moving the slide from said slide carrier into said magazine when said slide carrier is returned to its second position, said slide projector further comprising a pair of auxiliary light source devices and a corresponding pair of photoelectric elements, each of said photoelectric elements arranged adjacent to one of said lamp housings and mounted off axis with respect to its corresponding auxiliary light source, a pair of reflecting mirrors each of which is respectively mounted on each of said slide carriers to reflect light from each of said auxiliary light source devices on-axis to each of said photoelectric elements when said slide carriers are in said first positions if there are no slides in said slide carriers but said reflecting mirrors being obstructed if there are slides in said slide carriers, and a driving control circuit which is coupled to and controlled by said photoelectric elements to turn off the projection lamps housed in said respective lamp housings when said slide carriers are empty at said first positions, respectively, so that light is reflected from said auxiliary light source devices to said photoelectric elements to thereby stop the operation of said slide projector.

3,858,973

METHODS OF THERMOPLASTIC XEROGRAPHY AND APPARATUS THEREFOR

John Crampton Heurtley, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 27,310, April 10, 1970, Pat. No. 3,698,892. This application July 27, 1972, Ser. No. 275,725
Int. Cl. G03g 15/00
U.S. Cl. 355—9 8 Claims



1. Thermoplastic xerography apparatus for forming a viewable frost deformation pattern on a thermoplastic surface of a photoreceptor structure which includes at least a thermoplastic layer and a photoconductive layer, said apparatus comprising:

means for charging said thermoplastic surface of said photoreceptor structure;

means for selectively exposing said photoreceptor structure to image radiation representative of the viewable pattern to be formed; and

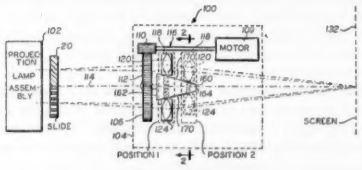
means for developing said photoreceptor structure in the presence of an electric field, said means for developing including means for lowering the viscosity of said thermoplastic surface and means for applying an electric field to said thermoplastic surface during an interval when the viscosity thereof is lowered, herein said electric field applying means comprises electrode means for generating a periodically varying electric field adapted to cause said thermoplastic layer to deform in an organized manner which is everywhere periodic.

3,858,974

FILM RECORD

Stephen A. Liguori, 110 Elworth Ter., Glen Rock, N.J. 07452

Filed May 3, 1973, Ser. No. 356,970
Int. Cl. G03b 27/62
U.S. Cl. 355—46 9 Claims



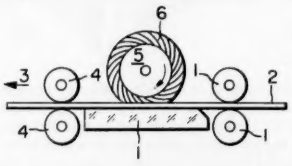
1. A film record frame having a predetermined displayable frame area and an associated optical center for purposes of display, said frame area being divided into a plurality of contiguous image display areas each containing a distinct separately sequentially displayable image, each of said image display areas being substantially equal in size and having a different distinct optical center for purposes of display of said image contained therein; said image display area optical centers being equidistant from said frame area optical center and being equidistant from the adjacent image area optical center, said sequentially displayable images each having substantially the same orientation with respect to each other and said frame area optical center, each of said image display areas comprising the maximum size and configuration of equal diametral dimension containable within an area sectional segment of a maximum size circular area containable within said frame area, said plurality of images being sequential with respect to each other and separately sequentially displayable from said film record while said film record is stationary for purposes of display, said image display areas being registerable on each other with respect to a display surface when sequentially displayed, whereby a plurality of images may sequentially be displayed from said film record in a stationary position thereof capable of providing an animated display from said stationary film record.

3,858,975

COPYING APPARATUS

Wilhelm Knechtel, Biebertal, and Gerhard Petersdorf, Pohlheim, both of Germany, assignors to Canon Kabushika Kaisha, Tokyo, Japan

Filed July 13, 1972, Ser. No. 271,271
Claims priority, application Germany, July 20, 1971, 2136141
Int. Cl. G03b 27/62
U.S. Cl. 355—50 2 Claims



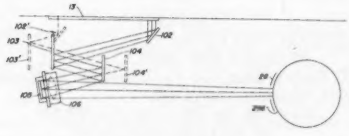
1. A copying machine comprising a flat glass plate, means for transporting an original on said flat glass plate, and a rotatable pressure roller having thereon a white fur covering, said pressure roller being disposed above said flat glass plate at a predetermined position to input a light pressure on said original while being transported between said flat glass plate and said pressure roller.

3,858,976

OPTICAL SCANNING SYSTEM

Edric Raymond Brooke, 3 Densley Close, Welwyn Garden City, England

Filed Feb. 25, 1974, Ser. No. 445,529
Int. Cl. G03b 27/70
U.S. Cl. 355—66 8 Claims



1. In an apparatus wherein an original document is supported in a plane upon a platen and wherein means are provided along an optical path for progressively scanning the original and for projecting the light from successive scanned areas upon a moving photosensitive surface, the improvement wherein said scanning means comprises a compact optical scanning system including:

a first moving mirror inclined to said platen, said first mirror moving at a first speed to scan said original, said first mirror receiving said light from said successively scanned areas of said original;

a second moving mirror oriented normal to said platen and positioned to receive light reflected from said first moving mirror, said second mirror moving at a second speed different from said first speed;

a third moving mirror oriented normal to said platen and positioned to receive light reflected from said second moving mirror, said third mirror moving at a third speed different from said first speed, said third mirror moving in a direction substantially opposed from that of said second mirror;

said mirrors being positioned on one side of the plane of said platen and being movable in synchronism with one another, and the respective speeds of said mirrors being selected to maintain a constant length for the optical path between said platen and said moving photosensitive surface; and

a lens positioned to receive light reflected from said third mirror.

3,858,977

OPTICAL INTERFERENCE AUTHENTICATING MEANS

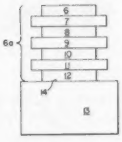
Kenneth M. Baird; Jerzy A. Dobrowolski, both of Ottawa; Allan J. Waldorf, Kemptville, and Philip D. Carman, Ottawa, Ontario, all of Canada, assignors to Canadian Patent and Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 305,069, Nov. 9, 1972, abandoned. This application Sept. 26, 1973, Ser. No. 400,939

Claims priority, application Canada, Jan. 18, 1972, 132683

Int. Cl. G01k *9/08*

U.S. Cl. 356—71 **8 Claims**



1. An optical interference authenticating means, comprising a substrate integral with an article to be authenticated, and a filter composed of at least one optical interference layer overlying and attached to the said substrate, said filter having a known characteristic of spectral reflectance, and a different, known characteristic of spectral transmittance both of said characteristics varying with the angle of incidence of light on the said filter, and said substrate having at least a portion of the surface thereof, adjacent to said filter, coloured a particular colour to absorb at least some of the light transmitted through the said filter.

3,858,978

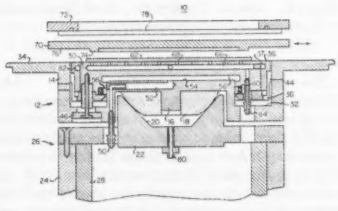
CHUCK FOR USE IN OUT-OF-CONTACT OPTICAL ALIGNMENT AND EXPOSURE APPARATUS

Karl-Heinz Johannsmeier, Mountain View, Calif., assignor to Kasper Instruments, Inc., Mountain View, Calif.

Filed Aug. 10, 1973, Ser. No. 387,489

Int. Cl. G03b *27/02*

U.S. Cl. 355—79 **10 Claims**



7. A workpiece chuck comprising:

a pivotally supported base member having a peripheral portion and a recessed central portion; and

a chuck plate for holding a workpiece, said chuck plate being supported within the recessed central portion of the base member for vertical axial movement therein between spaced positions relative to the peripheral portion of the base member.

3,858,979

METHOD OF DETERMINING THE PROPERTIES OF A JEWELERY STONE AND APPARATUS FOR THIS METHOD

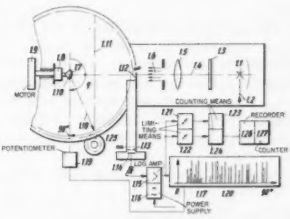
Maximo Elbe, Hamburg, Germany, assignor to Colorant Schmuckstein GmbH, Norderstedt, Germany

Filed Sept. 26, 1972, Ser. No. 292,417

Claims priority, application Germany, Sept. 29, 1971, 2148582

Int. Cl. G01n *21/22*

U.S. Cl. 356—30 **21 Claims**



1. In a method of detecting the properties of a precious stone comprising the steps of supporting the stone in a holder with a major face thereof arranged substantially perpendicular to a first axis, directing a beam of parallel light rays along the first axis toward the major face of the stone, and detecting the intensity of selected ones of the resulting reflected rays from the stone, the improvement which comprises the further step of rotating the stone about the first axis during the detecting step.

3,858,980

ATOMIC ABSORPTION AND FLUORESCENCE SPECTROSCOPY

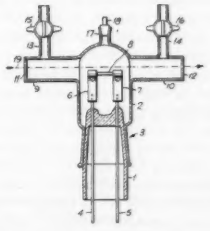
Thomas Summers West, Croydon, England, assignor to National Research Development Corporation, London, England

Filed Jan. 13, 1970, Ser. No. 2,532

Claims priority, application Great Britain, Jan. 16, 1969, 2590/69

Int. Cl. G01j *3/30*

U.S. Cl. 356—85 **5 Claims**



1. Apparatus for use in spectroscopy comprising a slender rod of graphite, a pair of terminals, means releasably securing the ends of said rod to said terminals in a horizontal position for depositing a sample on said rod, means for supplying an electric current to said terminals which may be passed through

the rod, means for providing an inert atmosphere around the rod, means for directing radiation from an external source horizontally into a region just above the rod, and means for detecting the radiation emerging horizontally from said region.

3,858,981

METHOD OF MEASURING IRREGULARITIES IN THE EVENNESS OF SURFACES

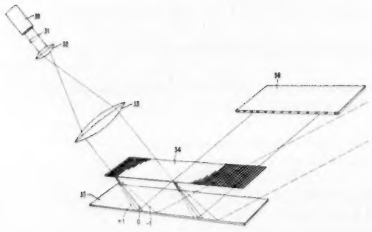
Walter Jaerisch, Boeblingen, and Guenter Makosch, Maichingen, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1972, Ser. No. 277,724

Claims priority, application Germany, Aug. 9, 1971, 2139836

Int. Cl. G01b 9/02

U.S. Cl. 356—109 **3 Claims**



1. The method of generating a fringe pattern useful in measuring the irregularities in the evenness of surfaces to be measured, said irregularities being on the order of from about one half to several microns in height comprising the steps of:

generating an interference field between said grid and said surface by passing a beam of substantially coherent visible light of a known wavelength through an optical grid at an angle of incidence of δ_0 said grid having a grid constant g on the order of from about one to several microns, said grid being spaced from said surface to be measured at a distance of several centimeters;

reflecting said interference field from the surface to be measured back onto said grid to form a first set of fringes corresponding to points on said surface to be measured located at odd multiples of a distance h from said grid, h being equal to $g/(4 \tan \delta)$ where $\delta = (\delta_0 + \delta_1)/2$ and δ_1 is the angle with which the plus first diffraction order of said beam makes with the normal of said grid; and

observing said grid in the direction of the zeroth order of the reflected first diffraction order diffracted during the first pass of said beam through said grid in order to simultaneously observe said first set of fringes and a second set of fringes intermediate adjacent ones of said first set of fringes, said second set of fringes being generated by the interference between radiation reflected directly from said grid and radiation reflected from said surface to be measured, said second set of fringes corresponding to points on said surface to be measured representative of the height contours of the surface to be measured at intervals corresponding substantially to one-half the wavelength of light of said beam.

3,858,982

APPARATUS FOR CENTERING SPECTACLE LENSES, AND FOR ATTACHING A MOUNT TO THE SPECTACLE LENS

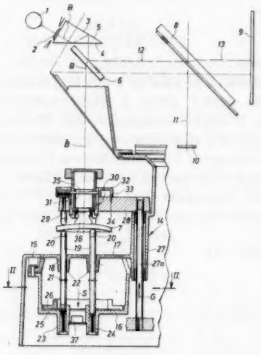
Helmut H. Meckler, Dusseldorf, Germany, assignor to Wernicke & Co. K.G., Dusseldorf, Germany

Filed Apr. 9, 1973, Ser. No. 348,912

Claims priority, application Germany, Apr. 26, 1972, 2220373

Int. Cl. G01b 9/00

U.S. Cl. 356—127 **12 Claims**



1. Apparatus for centering a spectacle lens preparatory to mounting the lens in an edge-grinding machine, which apparatus comprises lens-supporting means in predetermined relation to an optical viewing system arranged to superimpose images of a lens template and a scale of angles on a lens supported by the supporting means, which lens-supporting means includes first support means arranged to engage peripheral regions of the upper surface of the lens, second support means arranged to engage peripheral regions of the opposite surface of the lens, said second support means being movable against a resilient bias urging the second support means into a lens-engaging condition to accommodate differences in lens size and shape while permitting sideways adjustment of the lens, each of said first and second support means including a plurality of elongated rods disposed in spaced relationship to make point contact with the peripheral regions of the respective lens surface, a light source spaced from the lens support position and arranged to illuminate that surface of the lens opposite the surface viewed through the viewing system, and guiding means associated with the lens-supporting means for guiding into engagement with the lens after centering thereof a member for mounting the lens for grinding.

3,858,983

SHAPED PRODUCT MEASUREMENT

George B. Foster, Worthington; Donald L. Cullen, Columbus, and Albert C. Abnett, Westerville, all of Ohio, assignors to Autech Corporation, Columbus, Ohio

Filed Nov. 13, 1973, Ser. No. 417,365

Int. Cl. G01b 11/00

U.S. Cl. 356—163 **14 Claims**

1. An electro-optical gauging system for measuring a workpiece having one surface thereof in contact with a reference surface at the point of measurement, said system comprising a laser; means to direct a laser beam ontrthe surface of said workpiece opposite to that in contact with said reference surface; an optical detector; means for observing the point of impingement of the laser beam on the workpiece, means for directing a pair of backscatter images of said point of impingement onto said detector to produce a pair of images having a

spacing related to the position of said workpiece surface; means for scanning said laser beams and said workpiece in relation to each other; means for storing data representative of the position of said reference surface; first signal processing means for generating a signal representative of the backscatter

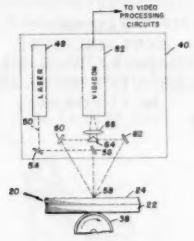
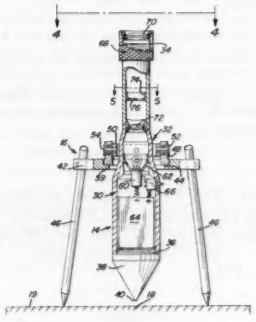


image spacing; and means responsive to said stored reference position data and said image spacing signal to develop an output representative of the position of the point of impingement of said laser beam on said workpiece in relation to said reference surface.

3,858,984
OPTICAL PLUMB LEVELER

Howard M. Denton, Dallas, and Martin Luther Slagle, Palmer, both of Tex., assignors to APL Enterprises, Inc., Garland, Tex.

Filed June 8, 1973, Ser. No. 368,248
Int. Cl. G01c *9/12*
U.S. Cl. 356—250 **14 Claims**

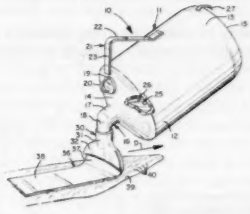


1. A plumb leveler, comprising, in combination:
a. a support;
b. a housing having an opening;
c. means for movably mounting the housing on the support;
d. a radiation source arranged within the housing for emitting a radiation beam through the housing opening; and
e. means mounted on the housing for orienting same with the radiation beam aligned along a plumb line, the housing being a hollow cylinder provided with a tapered portion and a pair of spaced, opposed, open ends, one of these open ends forming the housing opening, and the orienting means being a conical member constructed from a dense material for functioning as a weight and mounted on the housing blocking the other of the open ends.

3,858,985
HAIR REMOVING APPLICATOR AND PROCESS

Daniel Enoch Fiveash, 11927 Culver Blvd., No. 10, Los Angeles, Calif. 90066

Filed May 4, 1973, Ser. No. 357,237
Int. Cl. A47l *13/32*
U.S. Cl. 401—2 **5 Claims**



1. An applicator for dispensing and spreading hair remover adhesive onto a hair growth area, comprising:
a. a container having an upper portion formed with a dispensing neck and a lower portion that is generally open and formed with internal threads;
b. a piston slidably positioned within the container and arranged for movement along the longitudinal axis of the container;
c. a variable chamber formed by the container and the piston;
d. a supply of hair remover adhesive in the variable chamber;
e. a plunger with external threads inter-engaged with the internal threads of the container lower portion, so the plunger may be selectively advanced towards the container upper portion or retracted;
f. biasing means interposed between and engaging both the piston and the plunger so that pressure exerted on the piston by the biasing means may be selectively increased or decreased as the plunger is advanced and retracted respectively;
g. heating means in the container upper portion adjacent the variable chamber in order to melt the hair remover adhesive, the heating means including an electrical wire wound substantially throughout a segment of the container upper portion to fully surround a segment of the variable chamber, and, a switch connected to the electrical wire so heating may be selectively initiated and terminated;
h. a dispensing head removably coupled to the dispensing neck for dispensing and spreading melted hair remover adhesive onto a hair growth area when melted hair remover adhesive is extruded through the dispensing head under pressure from the piston and/or gravitational force;
i. an outermost part of the dispensing neck offset and inclined away from the axis of the container; and
j. a handle connected to a side of the container and having a grasping bar arranged in a manner so that when held substantially horizontal it serves to maintain the dispensing neck outermost part in a substantially erect position for best dispensing and spreading melted hair remover adhesive.

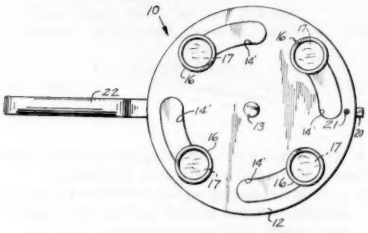
3,858,986
MECHANICAL DEVICE FOR COLOR CODING MATERIALS

Melvin E. Gilbert, Box 75332, Oklahoma City, Okla. 73107

Filed Apr. 4, 1973, Ser. No. 325,345
Int. Cl. B43k *27/04*
U.S. Cl. 401—34 **1 Claim**

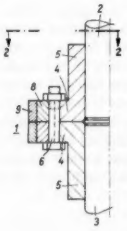
1. A color coding device for simultaneously applying a plurality of colors to material, comprising:

a pair of superposed discs coaxially connected in contiguous contact for relative rotation about their axis,
the lowermost said disc having a plurality of radially spaced openings,
the uppermost said disc having a like plurality of arcuate slots formed on a radius coinciding with the radial position of the openings,
the width of the slots being at least equal to the diameter of the openings and extending through an arc of at least 45°;
a like plurality of paint containing cylinders each having a shank portion removably received simultaneously by the



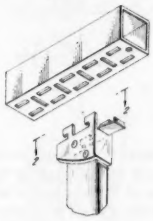
respective opening when aligned with the slots, each said shank having a ball for rolling contact with the material to be color coded;
a laterally projecting handle secured to the uppermost said disc;
a radially outward projecting tab secured to the lowermost said disc for manual rotation of the latter and changing the position of the cylinders with respect to the handle; and,
a set screw threadedly connected with the uppermost said disc for maintaining the openings in a predetermined radial position with respect to the slots.

3,858,987
DRIVE SHAFT FLANGE COUPLING STRUCTURE HAVING A FIXED SHEAR SPEED
Siegfried Kleinhans, and Hans Kummlee, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munchen, Germany
Filed May 21, 1974, Ser. No. 471,912
Int. Cl. F16b *7/00*
U.S. Cl. 403—2 **4 Claims**



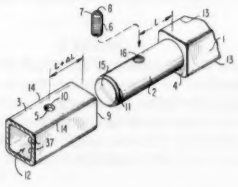
1. A flange coupling structure for connecting the adjacent ends of a plurality of separate shafts each of which includes an annular flange coupled to the end thereof, comprising:
a plurality of arcuate-shaped segments, disposed about each of said shaft flanges and forming a ring thereabout;
a breakable annular ring member disposed about each ring of said segments; and
a plurality of fastening means, coupled to said ring segments and said flanges, for coupling the ends of the shafts, said ring segments including a plurality of spaced-apart apertures for receiving said fastening means, at least one half of the circumference of said apertures being disposed in said plurality of ring segments.

3,858,988
JOINT STRUCTURE
Melvin Cohen, 58 Heights Rd., Wayne, N.J.
Filed Feb. 7, 1973, Ser. No. 330,288
Int. Cl. F16b *9/00*
U.S. Cl. 403—18 **4 Claims**



1. A joint structure comprising a first member including at least one L-shaped hook and a spring biased locking mechanism, a second member having a plurality of elongated rectangular apertures adapted to receive said L-shaped hook and said spring biased locking mechanism whereby said L-shaped hook is rigidly held in fixed position within at least one of said plurality of apertures by said spring biased locking mechanism, said second member being a rectangular tube having at least one of said rectangular apertures parallel thereto in one of its four sides and the longitudinal edge of said rectangular aperture being parallel to the longitudinal edges of said tube and receiving said hook, said spring biased locking mechanism being a resilient rectangular plate having one L-shaped end which lodges into one of said plurality of apertures to rigidly secure said L-shaped hook with said second member, and at least one of said rectangular apertures extending transverse to the longitudinal edge of said tube and receiving said L-shaped end of said rectangular plate.

3,858,989
JOINT FOR CONNECTING MEMBERS
Frank P. Field, 122 Eucalyptus Dr., El Segundo, Calif. 90245
Filed Sept. 10, 1973, Ser. No. 395,558
Int. Cl. F16b *7/00, 35/00*
U.S. Cl. 403—171 **11 Claims**



1. A joint for connecting members comprising:
a member having a male portion;
female member means for receiving said male portion;
camming means operably associated with an inner portion of said female member means; and
engagement means disposed in said male portion, and movable outwardly from a longitudnal axis of said male por-

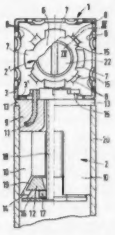
tion for engaging said camming means to urge said female member means longitudinally of said male portion and to rigidly lock said female member and said male portion together.

3,858,990

TUBE HOLDER AND INTERCONNECTOR SYSTEM

Otto Busselmeier, Hebbelstrasse 15, D-5828 Ennepetal Milspe, Germany

Filed Jan. 29, 1973, Ser. No. 327,880
Claims priority, application Germany, Jan. 31, 1972, 2204461
Int. Cl. F16b *12/40*
U.S. Cl. 403—194 **20 Claims**



1. A tube holder and interconnector system for the assembly and dismantling of frames and structures made up of at least two profiled tubes comprising:

multi-sided, bridging interconnector means (**1**) for connecting the tubes together having an opening (**6**) therein with dogs (**8**) associated therewith in at least two of its sides; and

at least two tube holders (**2,2'**), each comprising

a base (**9, 109, 9', 309, 409, 509**), one end of which carries rigid clamping lugs (**15, 115, 315, 415, 515**);

a tension screw (**18, 118, 18', 318, 418, 518**) having a head located at the same end of said tube holder as said clamping lugs;

an expander (**12, 112, 12', 312, 412, 512**) actuated by said tension screw; and

an intermediate component (**10, 110, 10', 310, 410, 510**) located between said base and said expander and being expandable to engage the internal wall of the tube by said expander being actuated by said screw;

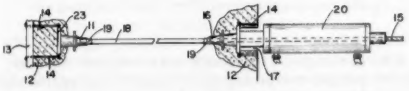
said tube holders being designed to be clamped to said interconnector means by means of inserting said lugs into said openings and rotating said lugs with respect to said dogs until said lugs and said dogs interlock.

3,858,991

APPARATUS FOR PREASSEMBLING A CABLE AND DEAD ANCHOR

Frederick W. Burtelson, Lombard, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Division of Ser. No. 38,247, May 18, 1970, Pat. No. 3,762,027. This application June 6, 1973, Ser. No. 367,379
Int. Cl. F16g *11/04*
U.S. Cl. 403—194 **2 Claims**



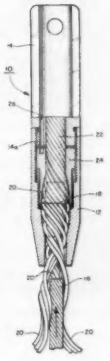
1. Apparatus for pre-assembling a dead anchor into wedging engagement with one end of a post-tensioning cable, said dead anchor including a tapered shell, a reaction plate surrounding same, and a tapered jaw cluster formed of jaw segments disposed within said shell, said shell and jaw cluster each having larger ends and opposite smaller ends and with the larger end of the jaw cluster being presented toward the larger end of the shell, said jaw cluster having teeth, said apparatus comprising a front wall, a rear wall, and two side walls to provide an open frame-like structure, said front wall being formed with a slot therein for receiving said shell with said larger end thereof being presented toward said rear wall, said front wall having means cooperating with said reaction plate for retaining said shell against movement in a direction away from said rear wall, a fluid power cylinder disposed with said frame-like structure and engaging the rear wall of same, means mounting said fluid power cylinder on said rear wall, the piston of said fluid power cylinder extending toward said front wall, and an elongate tubular ram mounted on said piston having an inner diameter sufficiently large to receive the end of said cable and having an outer diameter sufficiently small as to extend into said shell at the larger diameter end thereof and engage the larger end of said jaw cluster, said tubular ram being sufficiently long as to accommodate the free end of said cable whereby actuation of said cylinder will cause said jaw cluster to be forced by the ram into wedging engagement with the inner surface of said tapered shell and the surface of said cable such that the teeth bite into the cable an amount sufficient to prevent cable movement in either direction.

3,858,992

STRAIN RELIEF COUPLING

Robert A. Eucker, Brooklyn, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio

Continuation of Ser. No. 187,305, Oct. 7, 1971, abandoned. This application Nov. 19, 1973, Ser. No. 417,043
Int. Cl. F16b *7/02*
U.S. Cl. 403—214 **21 Claims**



1. A method of preassembling an appliance for a linear body, comprising:

applying a protuberance member about an elongated form of a configuration simulating said linear body and arranged for release from said appliance following assembly;

wrapping preformed helical rod means of a predetermined pitch length and of an internal diameter smaller than that of said linear body about said form and protuberance so that said rod means extend over said protuberance and in tightly gripping relation with said form;

securing said rod means to said protuberance to form an integral appliance assembly;

unwrapping said preformed helical rod means extending in at least one direction from said protuberance; and

releasing said form from said appliance by withdrawing said form from said protuberance and said helical rods.

3,858,993

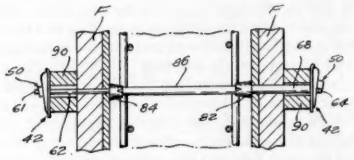
REUSABLE TIE ASSEMBLY FOR CONCRETE FORMS

Peter R. Lovisa, Pelham, and Dusan Tausanovitch, Northport, both of N.Y., assignors to Tullio E. Lovisa, Huntington Station, N.Y., a part interest

Division of Ser. No. 232,450, March 7, 1972, Pat. No. 3,822,860. This application Apr. 10, 1974, Ser. No. 459,566

Int. Cl. F16b *2/14, 9/00*

U.S. Cl. 403—247 **9 Claims**



1. A wedge adapted to be mounted to a concrete form and capable of releasably coupling a tie assembly, said wedge comprising a generally rectangular body portion and a central portion thereof being raised to form an incline plane, said incline plane having a slot extending longitudinally thereof; tie rod coupling means slidably mounted in said slot and having means formed thereon for releasably mounting said tie assembly to said wedge.

3,858,994

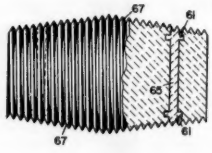
ELECTRODE NIPPLE DRILLING MACHINE AND PROCESS

George E. Frazier, Fulton, Ky., assignor to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 184,140, Sept. 27, 1971, Pat. No. 3,761,191. This application July 2, 1973, Ser. No. 376,068

Int. Cl. E04b *1/48;* **E21b** *17/04*

U.S. Cl. 403—267 **5 Claims**



1. A nipple for joining contiguous carbonaceous electrode sections comprising:

1. A carbonaceous body having threaded end portions for joining the electrode sections, at least one of said end portions having a hole extending crosswise through an end of the body, the hole extending completely through the body so each end of the hole communicates with the threaded portions;

2. A fusible thermosetting bonding material disposed within the hole for bonding the nipple to the electrode and;

3. A cavity for retaining the thermosetting bonding material within the hole and cavity being completely embedded within said body and, the cavity communicating with the hole, whereby only said hole is visible on the surface of said body.

3,858,995

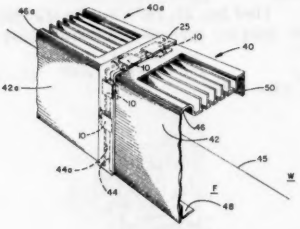
HEATING AND VENTILATING ENCLOSURE MODULE CONNECTION MEANS

Robert H. Sand, Canton, Conn., assignor to The Vulcan Radiator Company, Hartford, Conn.

Filed Apr. 4, 1973, Ser. No. 347,635

Int. Cl. F16b *5/06*

U.S. Cl. 403—300 **3 Claims**



1. Enclosure module connection means for joining two adjacent module panels and comprising in combination:

a. a connector strip having a rear wall which overlies the marginal adjacent side edges of the panels, and said rear wall also having a rearwardly open cavity extending longitudinally of said strip;

b. said rearwardly open longitudinally extending cavity having its inner longitudinally extending side edges laterally spaced from one another by a slightly greater distance than the spacing between its outer longitudinally extending sides edges;

c. a plurality of clips for use at longitudinally spaced locations along said strip to hold said strip to said panels, each of said clips having laterally opposed flanged portions to permit the clip to be slidably received in said longitudinally extending cavity,

d. each clip having a panel engaging leg spaced rearwardly from one of said flanged portions to resiliently engage the rear of the panel and thereby secure the panel to the connector strip,

e. some of said clips having their panel engaging legs oriented in one direction to engage one panel and other clips oppositely oriented to engage the other of said two panels.

3,858,996

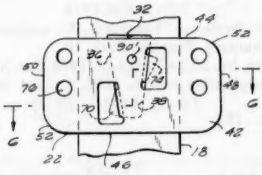
BRACKET CLIP

Edward M. Jarvis, Ambler, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.

Filed Oct. 19, 1972, Ser. No. 298,826

Int. Cl. G09f *7/00*

U.S. Cl. 403—353 **6 Claims**



1. A bracket clip in combination with a support member, said bracket clip comprising a plate member having first and second tab members extending from one side of said plate member,

each said tab member being substantially L-shaped in cross-section and including a first leg segment extending out-

wardly from said plate member and a second leg segment extending substantially parallel to but spaced from said plate member,

said first leg segment of said first tab member defining a plane passing through the longitudinal extent of said leg segment and the extension of said plane intersecting the extension of a plane defined by the longitudinal extent of the first leg segment of said second tab member, whereby said first leg segments are disposed at an angle of inclination,

said second leg segment of each said tab member extending outwardly from said first leg segment, said second leg segments extending from said first leg segments in generally opposite directions,

said support member including a slot therein defined by spaced, substantially parallel upper and lower edges and spaced lateral edges disposed to taper inwardly at an angle of inclination complementary to the angle of inclination of said first leg segments of said tab members,

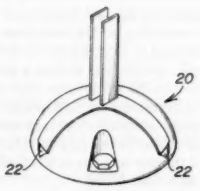
said first leg segments being spaced apart such that said tab members of said bracket clip are freely insertable within said slot when said bracket clip is positioned in a first position with respect to said slot, the opposite outer edges of said first leg segments being spaced apart a distance no greater than the distance between said upper and lower edges of said slot and wherein said second leg segments of said tab members overlie said lateral edges when said bracket clip is rotated to a second position angularly offset from said first position thereby to securely join said clip to said support member.

3,858,997

PORTABLE TRAFFIC SIGN AND BASE THEREFOR

Richard B. Boone, 2321 Catalo, Arlington, Tex. 76010

Filed Feb. 20, 1974, Ser. No. 443,943
Int. Cl. E01f *9/00*
U.S. Cl. 404—10 **17 Claims**



1. An article of manufacture, comprising:

a. a rigid base adapted to rest upon the ground along a roadway, said base having at least two generally horizontal recesses with said recesses being on opposite sides of the base such that a structural element extending between the recesses may be placed in tension;

b. an upright post; and

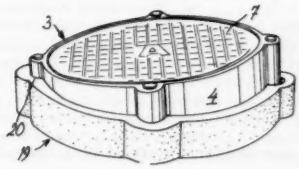
c. means for selectively attaching the bottom end of the post to the rigid base, said means comprising a plurality of resilient spring elements, with each of said elements having a first end permanently attached to the post and a second end adapted to engage a respective one of the horizontal recesses in the base.

3,858,998

MANHOLE FRAME

Folke Larsson, and Rune Larsson, both of P.O. Box 32, Forsvik, Sweden

Filed Aug. 22, 1972, Ser. No. 282,829
Int. Cl. E02d *29/14*
U.S. Cl. 404—26 **6 Claims**



1. A manhole frame for vaults in roadways and the like and intended to cover the opening of such a vault, comprising in combination a vault having an opening, a removable cover, an inner ring being of a configuration for supporting said removable cover and being provided with projections extending outwardly from said inner ring and having preferably the same height as said inner ring itself, each of said projections having in its upper surface a pocket with a tapped bottom wall, threaded bolts each extending through one of said tapped bottom walls, an outer ring having approximately the same height as said inner ring and an inner diameter some what exceeding the outer diameter of said inner ring such that a clearenece exists between said outer and said inner ring, said outer ring also having recesses to receive also with a clearence the projections of said inner ring whereby said inner ring may be raised, lowered and inclined relative to the outer ring by turning said bolts, said outer ring having further secured thereto combined supporting and guiding means secured to said outer ring with each means having a horizontal support part extending substantially radially inwards towards the center of said outer ring as well as a substantially vertically and downwardly extending guide part, said vertically extending guide parts being arranged to form when projecting into the upper part of the vault a centering guidance for said outer ring relative to the upper part of the vault, at least a part of each of said horizontal parts being located at the under side of one of said recesses in said outer ring thus enabling the lower end of said bolts being threaded through said projections to act upon said supporting parts.

3,858,999

PAVED ROADBED

Yahiko Kadono, Tokyo; Teruo Nakazato, Omiya; Eiichi Miura, Yokohama, and Thunekathu Kitamura, Muroran, all of Japan, assignors to Nippon Oil Company Ltd., Tokyo, Japan

Filed Nov. 19, 1973, Ser. No. 417,081
Claims priority, application Japan, Nov. 24, 1972, 47-117217
Int. Cl. E01c *3/00*
U.S. Cl. 404—27 **9 Claims**

1. A paved roadbed comprising:

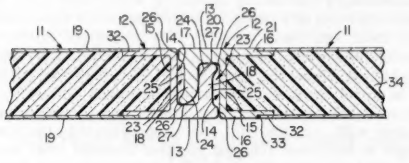
a lower roadbed layer;

a layer formed substantially of sulfur and positioned over

said lower roadbed layer;
an upper roadbed layer positioned over said sulfur layer;

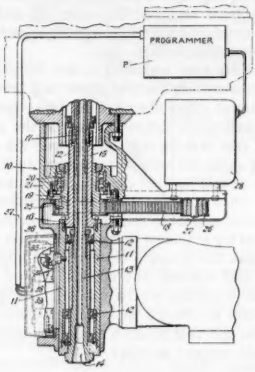
and
a surface layer positioned over said upper roadbed layer.

3,859,000
ROAD CONSTRUCTION AND PANEL FOR MAKING SAME
John L. Webster, Richmond, Va., assignor to Reynolds Metal Company, Richmond, Va.
Filed Mar. 30, 1972, Ser. No. 239,471
Int. Cl. E01c *5/22*
U.S. Cl. 404—41 **18 Claims**



1. A road construction comprising a plurality of substantially identical invertible interlocked panels, each of said panels comprising, a plurality of single-piece peripheral frame members fixed together to define a polygonal configuration, each of said members having a single roughly L-shaped projection extending therefrom which is adapted to be independently interlocked with an identical projection of an associated member free of additional locking means, each of said members having a U-shaped portion comprised of a bight having a pair of parallel extensions extending from opposite ends of the bight, said U-shaped portion being adjoined by its associated L-shaped projection, said L-shaped projection having a pair of legs with one of said legs being arranged perpendicular to said bight and having an outside surface arranged coplanar with the outside surface of an associated extension and the other of each of said legs being arranged roughly parallel to said bight and having a height which is precisely controlled and extends over the major part of the height of said bight so that the terminal outer edge of said other leg engages the inside surface of an associated perpendicular leg of said associated member to assure that adjoining interlocked panels have their top and bottom surfaces arranged substantially coplanar, said other leg having a cutout therein in the central portion of its outside surface defining surface portions at opposite ends of the cutout which assure a comparatively tight interlocking fit and provide comparatively large bearing surfaces preventing horizontal movements, each of said legs of said L-shaped projection having a thickness which is roughly twice the thickness of siad bight, said U-shaped portion and L-shaped projection being made of a metallic material and having a solid cross section throughout, and a pair of sheets fixed on opposite sides of said frame members and defining bottom and top surfaces of said panel.

3,859,001
QUILL DRIVE MECHANISM FOR MACHINE TOOLS
William M. Hoddinott, Milford, and Richard J. Hreschak, Monroe, both of Conn., assignors to Textron Inc., Providence, R.I.
Filed Nov. 7, 1973, Ser. No. 413,608
Int. Cl. B23b *39/08, 47/20*
U.S. Cl. 408—3 **3 Claims**



1. A machine tool having a spindle frame, a quill slidably mounted in said frame for axial movement therein, a spindle mounted in said quill for axial movement therewith and rotatable movement thereon, said quill having a cylindrical portion provided with an external helical groove of determinate pitch, a preloaded ball-nut mounted for rotation on said cylindrical portion and restrained from axial movement with the balls of the nut riding in said groove, means for rotating said ball-nut to drive said quill, spindle and tool therein toward and from the working comprising a stepping electric motor, non-slipping driving means between said motor and said ball-nut, and programmed control means including electric switch means for starting and stopping said motor, said control means being programmed according to the tool then in the spindle and work to be performed to stop the motor and thus the axial movement of the quill, spindle and tool at a precise predetermined position relative to the work when said motor has made a number of steps determined by said programmed control means which comprises limit switch means controlled by the quill for causing said motor to operate to return the quill and spindle with the tool therein to a predetermined starting position at the limit of its return travel.

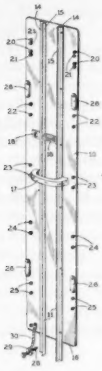
3,859,002
TEMPLATE
Donald P. Sauey, Ocala, Fla., assignor to Closet Maid, Inc., Ocala, Fla.
Filed July 12, 1973, Ser. No. 378,504
Int. Cl. B23c *49/02*
U.S. Cl. 408—16 **6 Claims**

1. In a template comprising:
a plate member elongated in one direction and having a flat front face for engagement with a vertical wall in a building, said plate member having a plurality of sets of openings therein for respectively receiving and guiding a drill bit, with the openings in each set being closely spaced apart in said one direction;
a handle on the back of said plate member intermediate the ends thereof;
bubble level means on the back of said plate member having means for indicating when said openings have a predeter-

mined relationship to one another corresponding to the desired positions for holes to be drilled in the wall; and a pair of laterally spaced, elongated reinforcing bars on the back of said plate member extending lengthwise in said one direction and projecting equally beyond one end edge of said plate member for engagement with a flat reference surface from which the drilled holes are to be spaced;

the improvement which comprises:

a first pair of arms pivoted to the back of said plate member close to one longitudinal edge thereof and located respectively toward the opposite ends of said plate member;



and a second pair of arms pivoted to the back of said plate member close to the opposite longitudinal edge thereof and located respectively toward the opposite ends of said plate member;

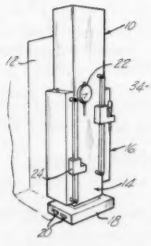
the arms of each pair being individually adjustable pivotally from a retracted position behind the plate member to an extended position projecting laterally beyond the respective longitudinal edge of the plate member for engagement against a cross wall that extends perpendicular to said first-mentioned wall to provide a reference surface for the template.

3,859,003

PRECISION HEAD FOR A MACHINE TOOL

George W. Schulz, 1665 Moulin, Madison Heights, Mich. 48071, and Werner C. Schulz, 19744 Littlefield, Detroit, Mich. 48235

Filed Nov. 23, 1973, Ser. No. 418,579
Int. Cl. F16c *23/06*
U.S. Cl. 408—234 R **5 Claims**



1. A precision head for a machine tool comprising:

an outer stationary ram support;

an inner ram movable axially in said ram support;

a pair of opposed inner and outer V-shaped cross-sectional raceways mounted at opposed sides of the ram and ram support, said raceways each containing a plurality of spaced ball bearings maintained therein to provide free sliding movement of the ram relative to the ram support; a means for locking the opposed raceways into accurate position comprising an adjusting screw extending through a threaded portion of the ram support for initially engaging and preloading one of the outer V-shaped raceways toward the ball bearings and the opposed inner raceway in prealigned relationship; and

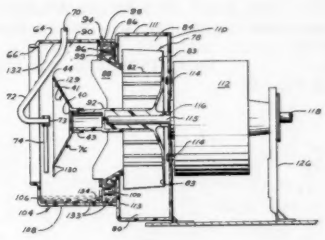
a lock screw threadably engaging the outer raceway, axially extending through the adjusting screw and having its head in abutment with the head of said adjusting screw for locking it to hold the raceways in said prealigned relationship; at least one additional means is included in said ram support for locking the opposed raceways, comprising a second adjusting screw extend-ing through a threaded portion of the ram support for initially preloading one of the outer V-shaped raceways toward the opposed inner raceway in prealigned relationship, and a second lock screw threadably engaging the outer raceway, axially extending through the adjusting screw and having its head in abutment with the head of said adjusting screw for locking it in said prealigned relationship, said second adjusting screw and lock screw having their axes oxiented transaxial to the axes of the first adjusting screw and lock screw.

3,859,004

CONDENSER APPARATUS

Robert E. Condit, Louisville, Ky., assignor to General Electric Company, Lousiville, Ky.

Filed Oct. 23, 1973, Ser. No. 408,459
Int. Cl. F26b *13/00*
U.S. Cl. 34—75 **12 Claims**



1. Condenser apparatus for removing moisture from air by passing moisture-laden air through a cloud of cooling liquid droplets having:

a. a housing,

b. liquid inlet means at one end of said housing for introducing a stream of liquid into the housing essentially along the central axis of the housing,

c. air inlet means at said one end of the housing,

d. air outlet means at the end of the housing opposite the air inlet means,

e. a rotatable blower for inducing air to flow from the air inlet means to the air outlet means,

f. means for collecting liquid droplets which is positioned within the housing and located between the disc and blower,

g. means for removing liquid from the condenser apparatus, and

h. means for driving the rotatable components,

the improvement comprising a single rotatable disc positioned within the housing and axially spaced from said liquid inlet means, said disc having a hub, a continuous wall slanting

upwardly and outwardly relative to the hub and in the direction of the liquid inlet means and terminates at a circular periphery.

3,859,005

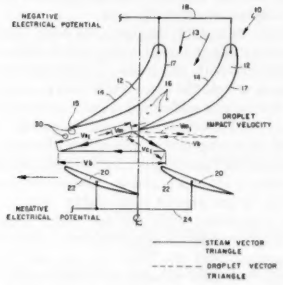
EROSION REDUCTION IN WET TURBINES

Albert L. Huebner, 20331 Mobile St., Canoga Park, Calif.

Filed Aug. 13, 1973, Ser. No. 387,996

Int. Cl. F01d *1/00*

U.S. Cl. 415—1 **4 Claims**



1. A method to reduce turbine blade erosion associated with wet turbines comprising the step of applying an electrical charge to the turbine upstream of the rotating blades so as to electrically charge said liquid adhering to the surface of said turbine to reduce the size of droplets being torn away from said surface, thereby minimizing erosion damage to said rotating blades.

3,859,006

MACHINE INSTALLATION CONTROL SYSTEM

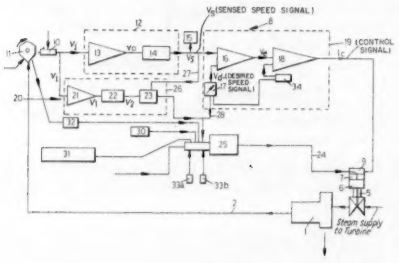
Forrest Thomson Randell, Glasgow, Scotland, assignor to Weir Pumps Limited, Glasglow, Scotland

Filed June 8, 1973, Ser. No. 368,456

Claims priority, application Great Britain, June 8, 1972, 26724/72

Int. Cl. F01b *25/00*

U.S. Cl. 415—17 **10 Claims**



1. A control arrangement for a machine installation of the type including a drive machine for connection to a load, and particularly but not exclusively to an installation wherein the drive machine is constituted by a steam turbine, the control arrangement comprising in combination:

a. primary indicating means for sensing any of the drive speed of the drive machine and other operating condition prevalent within the installation dependent on the drive speed, the primary indicating means generating signals proportional to the sensed condition;

b. a signal generating device settable to produce a signal proportional to the desired value for said sensed condition;

c. a comparator including an output for a control signal;

d. line means delivering the produced signal from the primary indicating means and the desired value signal from the signal generating device to said comparator whereat the signals are compared and an output control signal produced based on the comparison;

e. speed regulating apparatus for the drive machine including

i. an actuator having a motor operable for adjustment of the drive machine speed;

ii. a power supply line connectible to a power source for supplying power to said actuator motor; and

iii. a servo-control device for regulating the power supply to said actuator motor and thereby the operation of the actuator for adjustment of the drive machine speed;

f. conduit means for delivering the control signal from the comparator output to the servo-control device for setting of the device so that the desired value for the measured operating condition may be maintained; and

g. secondary emergency indicating means including:

i. sensing means for sensing any of the drive machine speed and other operating condition within the machine installation,

ii. a switch in said power supply line to the actuator motor and movable to an open position to cut-off the supply of power to said actuator motor for prompt stoppage of the drive machine, and

iii. connecting means operatively connecting the sensing means to said switch whereby when the operating condition sensed by said sensing means reaches an unsatisfactory value the switch is moved to said open position to stop the drive machine.

3,859,007

APPARATUS FOR MONITORING AND LIMITING THE SPEED OF TURBINES

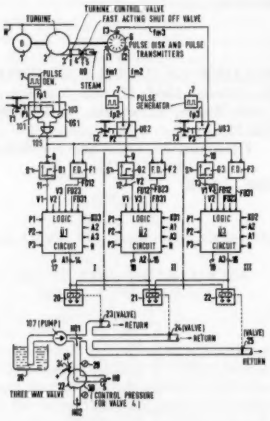
Hans-Jochen Kowalski, Erlangen, and Peter Schonfeld, Essen, both of Germany, assignors to Siemens Aktiengesellschaft, Munchen, Germany

Filed Nov. 1, 1973, Ser. No. 411,916

Claims priority, application Germany, Nov. 6, 1972, 2254250

Int. Cl. F01b *25/06*

U.S. Cl. 415—30 **16 Claims**

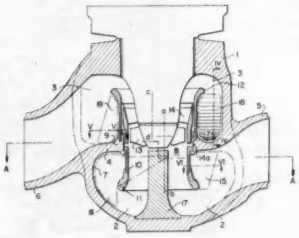


1. Apparatus for monitoring and limiting the speed of a turbine comprising:

a. means coupled to the turbine shaft to output a plurality of pulse trains each having a frequency which is equal to the others and proportional to the turbine speed;

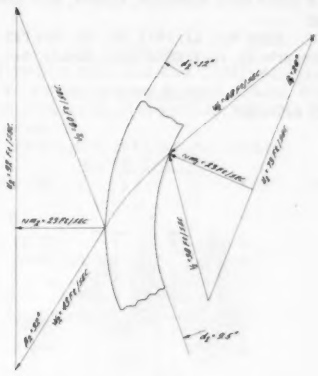
b. an equal plurality of monitoring channels each channel comprising:
1. means having a respective one of said pulse trains as in input and providing a first output if the frequency of the pulse train exceeds a predetermined value;
2. means having two of said pulse trains as inputs, one of which is the same pulse train provided to said means having a respective pulse train as an input, with a different pair coupled to each channel, and providing a second output if said two pulse trains have different frequencies; and
3. means having said first and second outputs as inputs and providing a final output in response to either of said first and second outputs; and
c. means responsive to the final outputs of said plurality of channels to shut down the turbine.

3,859,008
PUMP WITH OFFSET INFLOW AND DISCHARGE CHAMBERS
Rudolf Wieser, Voitsberg, Austria, assignor to Maschinenfabrik Andritz Aktiengesellschaft, Graz, Austria
Filed June 13, 1972, Ser. No. 262,315
Claims priority, application Austria, July 6, 1971, 5846/71
Int. Cl. F04d *29/40, 29/46, 29/54*
U.S. Cl. 415—219 **2 Claims**



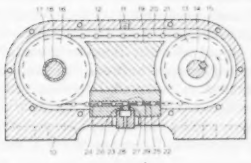
1. In a pump for high operating pressures, particularly a main coolant pump for pressurized water or boiling water reactors, comprising a pressure housing, a vertical pump shaft having an impeller thereon, a distributor surrounding the impeller, and suction and discharge connections, said pump shaft having an axis normal to the axis of said suction and discharge connections,
the improvement comprising separator plate means having an opening therein and dividing said pressure housing into a lower section constituting an inflow chamber means and an upper section constituting a discharge chamber means, said upper section containing said impeller and distributor,
and the axis of said inflow chamber means being displaced from the pump shaft axis toward the suction side.

3,859,009
CENTRIFUGAL BLOWER
Earle W. Ballentine, 127 Lomita Ave., El Segundo, Calif. 90010
Filed Nov. 5, 1973, Ser. No. 412,564
Int. Cl. F04d *29/28*
U.S. Cl. 416—186 **5 Claims**



1. A centrifugal blower without a scroll comprising:
blade means consisting of 16 identical backward curved blades with inlet and outlet angles of inclination of **28°** and **32°**, respectively, and wherein the ratio of the blade inlet and outlet diameters is 0.792.

3,859,010
METERING PUMP
Alden A Lofquist, Jr., 10 Rita Way, Orinda, Calif. 94563
Filed Mar. 5, 1973, Ser. No. 338,103
Int. Cl. F04b *19/14;* **F01d** *23/00;* **F03b** *9/00*
U.S. Cl. 417—321 **1 Claim**



1. Apparatus for metering small volumes of fluids which comprises:
A. Body means having an elongated passageway therein with said passageway having a smaller portion of smaller cross-sectional area, and a larger portion of larger cross-sectional area and a transitionary portion therebetween,
B. An endless member extending longitudinally through said passageway and movable longitudinally therethrough,
C. A plurality of annular portions attached to said endless member for movement therewith through said passageway with said annular portions being engagable with said passageway in fluid sealing relation in both said first and second portions,
D. First fluid flow means communicating with said passageway adjacent to said transitionary portion,

E. Second fluid flow means communicating with the larger portion of the passageway, and

F. Characterized further by the inclusion of a second transitory portion in said passageway with third fluid flow means to said first fluid flow means.

3,859,011

DIAPHRAGM PUMPS

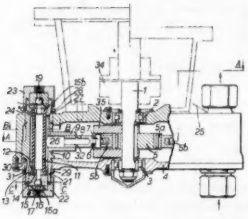
Bernard Eaton Hart, Rosebank, Stoford, near Salisbury, England

Filed Nov. 24, 1972, Ser. No. 309,107

Claims priority, application Great Britain, Nov. 30, 1971, 55628/71

Int. Cl. F04b *9/10*

U.S. Cl. 417—389 **17 Claims**



1. A diaphragm pump comprising a drive shaft, a plurality of cylinders whose axes are equi-angularly spaced about the drive shaft axis and each of which axes is normal to the drive shaft axis, a piston received by each cylinder and reciprocable by means coupled to the drive shaft, each cylinder being in communication with a pressure chamber, each pressure chamber being defined between a tubular body defining a cylindrical cavity and the external surface of an open-end tubular diaphragm extending coaxially of the cavity, and a solid mandrel extending coaxially within each tubular diaphragm, each mandrel providing support surfaces for the diaphragm, the support surfaces extending axially of and being angularly spaced relative to the axis of the respective diaphragm to define axially extending spaces therewithin, the tubular bodies having their axes parallel to the drive shaft axis and having a one-way inlet valve and a one-way outlet valve at the respective ends of the cylindrical cavity and communicating with the interior of said diaphragm and the spaces therewithin, each pressure chamber and associated cylinder being adapted to be filled with liquid whereby upon rotation of the drive shaft, liquid will be displaced between the pressure chambers and their associated cylinders by displacement of the pistons, causing the cross sectional areas of the diaphragms to vary thereby to vary the volume and the pressure within the diaphragms to cause displacement of liquid therethrough.

3,859,012

FLUID EJECTING MECHANISM

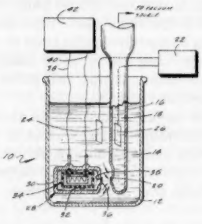
Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Aug. 10, 1972, Ser. No. 279,436

Int. Cl. F04b *9/08*

U.S. Cl. 417—437 **18 Claims**

1. Means for ejecting in one stroke a specific minute amount of fluid sample, said ejecting means including means for receiving and temporarily storing a given amount of fluid sample, said receiving and storing means having a very small outlet orifice, a solid thermal expansion device which is mounted within said receiving and storing means and which includes an electric heating element, an expandable element which surrounds said heating element, which is made from a material having a given thermal coefficient of expansion and which has a given volume, and an insulating jacket surrounding said expandable element and said heating element, and means for supplying a predetermined amount of energy to said thermal expansion device to raise the temperature of said



device to cause said device to expand thereby to eject in one stroke through said outlet orifice a specific minute amount of fluid sample from said receiving and storing means.

3,859,013

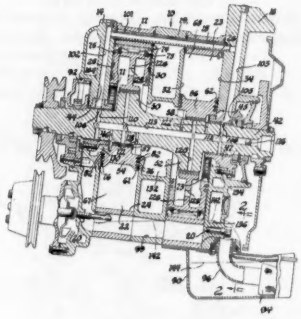
ROTARY ENGINE OIL PUMP PRIMING ARRANGEMENT

Paul D. Stevenson, Ann Arbor, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 4, 1974, Ser. No. 439,037

Int. Cl. F01c *21/04*; **F04c** *29/02*; **F01m** *9/00*

U.S. Cl. 418—88 **2 Claims**

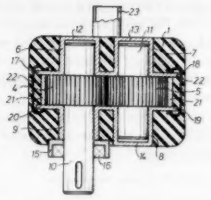


1. A rotary engine comprising a multipart housing including a front housing, a rear housing, a rotor housing intermediate said front and rear housings, a crankshaft rotatably supported in said multipart housing, said crankshaft having an eccentric located in said rotor housing, an oil tank secured to said multipart housing underneath said rear housing, an oil pump mounted in said front housing in an elevated location relative to said oil tank and driven by said crankshaft, an oil suction passage extending longitudinally through said multipart housing connected at an inlet end in said rear housing to said oil tank and connected at an outlet end in said front housing to said oil pump, said oil suction passage in a normal attitude inclined to drain oil to said oil tank, and dam means in said oil suction passage in said rear housing immediately upstream of said oil tank for trapping oil in said oil suction passage to a height sufficient to reach the ceiling of said oil suction passage so that a volume of oil sufficient to prime said oil pump is trapped in said oil suction passage.

3,859,014
GEAR PUMP

Wilhelm Dworak, Stuttgart, and Wolfgang Talmon, Otisheim, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed June 29, 1972, Ser. No. 267,710
Claims priority, application Germany, July 20, 1971, 2136214
Int. Cl. F01c *19/08, 21/00*
U.S. Cl. 418—135 **8 Claims**

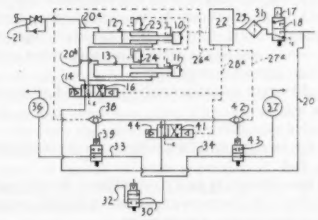


1. A gear pump or gear motor comprising a housing of synthetic plastic material having an internal chamber and an inlet and an outlet communicating with said chamber, a pair of meshing gears having opposite end faces provided in said chamber and each including a mounting shaft having journalling pins at its opposite ends; a plurality of cupped metallic journalling sleeves journalling the respective journalling pins for rotation, each of said sleeves having an open side facing into said chamber, a closed side provided with a transverse wall extending at least in part exteriorly of said housing and exposed to the ambient atmosphere, and a transverse flange in engagement with said respective end faces of said gears so as to conduct heat from said gears via said transverse wall to the exterior of said housing; spring clamps having intermediate and transversely extending end portions embedded in the material of said housing, and said transversely extending end portions engaging said flanges at the sides thereof facing away from the respective end faces of said gears for pressing said flanges against said end faces.

3,859,015
SHAPING DETECTOR FOR TIRE MOLD

John A. O'Brien, Jr., 2807 Central Ave., Birmingham, Ala. 35209

Filed Oct. 13, 1972, Ser. No. 297,197
Int. Cl. B29h *5/02, 5/08*
U.S. Cl. 425—29 **9 Claims**

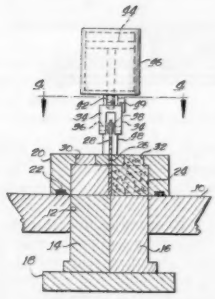


1. A shaping detector mechanism for a tire mold comprising at least one mold cavity having an inflatable bladder over which a green tire is placed, means supplying a shaping media to said bladder, a fluidic proximity sensor mounted for movement selectively to an outer position outwardly of the mold cavity and to an inner position located fixedly within said cavity so as to generate a signal only during the presence of an inflated bladder located in predetermined spaced relation from said sensor, a control valve for said means supplying shaping media to said bladder and movable selectively to a first position to supply shaping media and to a second position to interrupt the supply of shaping media, means to move said sensor to said inner position approximately at the time of introduction of final shaping media to said bladder, control means operatively connecting said sensor to said control valve to move said control valve immediately to said second position upon generation of said signal by said sensor to thus prevent both undershaping and overshaping of the tire, and means operatively connected to said sensor to move said sensor to said outer position upon generation of said signal by said sensor.

3,859,016
POWDER METALLURGY COMPOSITE

Sherwood W. McGee, Lisle, and James H. Mikoda, West Chicago, both of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Apr. 6, 1973, Ser. No. 348,646
Int. Cl. B22f *7/02*
U.S. Cl. 425—78 **5 Claims**



1. In apparatus for producing a bi-metallic powdered metal compact; the combination of a die with a cavity extending therethrough, punch means closing the bottom of said cavity, a hollow shoe fed with powders from an external source slideably seated on the die above the cavity, a blade mounted in the shoe for movement toward and away from said punch means, said blade dividing the interior of said shoe into spaced compartments containing, respectively, metallic powders having different characteristics, actuating means mounted on the shoe for moving the blade toward the punch means into tight engagement therewith as the punch means are retracted from the cavity to permit the powders to enter the cavity at opposite sides of the blade, said blade snugly engaging opposite sides of the cavity to prevent mixing of the powders entering the cavity, and actuating means mounted on the shoe for retracting the blade from said cavity after the powders have entered the cavity, said shoe being moveable in a direction parallel to the plane of the blade from said cavity with the blade retracted to accommodate compression of the powders in said cavity against said punch means.

3,859,017
EXTRUSION OF SHEATH ONTO ELONGATED SUPPORT USING DECOMPRESSION ZONES

Henri Meudec, Paris, France, assignor to Rol, Yonne, France

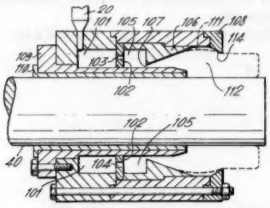
Continuation-in-part of Ser. No. 220,523, Jan. 24, 1972, abandoned, which is a continuation of Ser. No. 12,639, Feb. 19, 1970, abandoned. This application May 7, 1973, Ser. No. 357,661
Claims priority, application France, Feb. 20, 1969, 69.04362
Int. Cl. B29f *3/10*
U.S. Cl. 425—113 **6 Claims**

1. An extrusion head for coating a support with a plastic material comprising a substantially cylindrical elongated body

having at one end a first opening for the introduction of said plastic material under pressure in a generally radial direction and a second opening for the axial introduction of a solid or hollow elongated support, and, at the other end, a third opening for the axial exit of the coated support; said body containing, in succession in the axial direction:

a. a first decompression chamber,
b. a homogenizing and flow-equilibrating distributor means,
c. a second decompression chamber,
d. an expansion chamber, and
e. a die means;

the first decompression chamber being an annular chamber defined in part by the walls of said body encircling said support and being in communication with said first opening; the



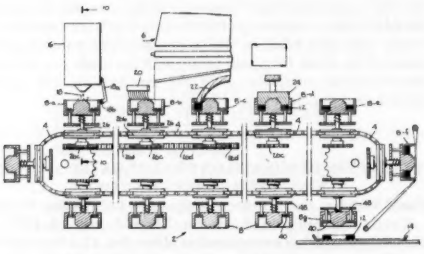
second decompression chamber being an annular chamber encircling said support and separated from the first chamber by said homogenizing and flow-equilibrating distributor means; said latter means comprising an annular diaphragm having a constricting passageway therethrough for homogenizing and evenly distributing said plastic material around the second decompression chamber; said second chamber communicating with the expansion chamber through an annular orifice, said expansion chamber being defined by a divergent outflow cone forming said material into an unconstricted sheath, and said die means being associated with said exit and having an inwar ly convergent wall for forming and constricting a compacted coating of desired thickness onto said support.

3,859,018

APPARATUS FOR MAKING COFFEE RINGS

Victor F. Gugler, Lyons, Colo., assignor to Entenmann's Bakery, Inc., Bayshore, Long Island, N.Y.

Filed July 3, 1972, Ser. No. 268,711
Int. Cl. A21c *3/08, 9/04*
U.S. Cl. 425—126 R **18 Claims**



1. A machine for making coffee rings from the lengths of twisted dough comprising:

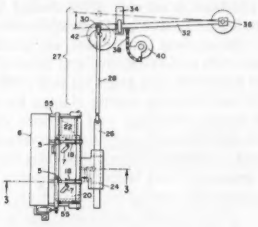
a. a plurality of molds each having an open cylindrical cavity;
b. means connected to the molds for advancing the molds spaced apart from one another along a predetermined path of travel with the cavities therein facing in a substantially upward direction;
c. means for rotating each of the advancing molds in a predetermined sense about an axis extending substantially in an upright direction;
d. means for sequentially receiving each length of twisted dough in a position in which the length of twisted dough overlies and extends substantially along one side of the predetermined path of travel, the rotational movement of a mold adjacent to the one side being opposite to the direction of the advancing of the molds; and
e. means for progressively guiding each of the lengths of twisted dough from the receiving means and into the open cylindrical cavity of a different one of the molds, the end portion of the lengths of twisted dough which is first adjacent to a mold being the initial portion of the length guided thereinto, the rotation of the advancing molds causing the guided lengths of twisted dough to be substantially wound within the circular cavities of the molds in the form of coffee rings.

3,859,019

STICK INSERTION APPARATUS

Edward M. Wight, Austin, Tex., assignor to Glacier Industries, Inc., Austin, Tex.

Filed Mar. 13, 1973, Ser. No. 340,649
Int. Cl. F25c *7/22*
U.S. Cl. 425—126 S **5 Claims**



1. An apparatus for inserting sticks into food products carried along by a conveyor driven by a main drive means, comprising:

a carriage;
carriage drive means for moving said carriage along a path substantially parallel to the direction of motion of said conveyor, the velocity of said carriage over a portion of said path being substantially the same as the velocity of said conveyor; said carriage drive means being synchronously connected to the main drive means for said conveyor; and further comprising:
a rotatable cam synchronously connected to said main drive means;
a rotatable cam follower;
means for causing said cam follower to bear against said cam; and
means for connecting said cam follower to said carriage, including a mechanical engagement means comprising:
a drive bar having a depression;
bearing support means attached to said carriage;
a rotatable member;
a shaft connected to said rotatable member;
forcing means attached to said shaft for causing said rotatable member to bear against said drive bar at said depression, and force said drive bar against said bearing support means;
means for controlling the force exerted by said forcing means;
means for relieving said forcing means when said rotatable member is forced out of said depression;

stick insertion means attached to said carriage, for inserting said sticks into said food products during said portion of said path when said velocities are substantially the same, and

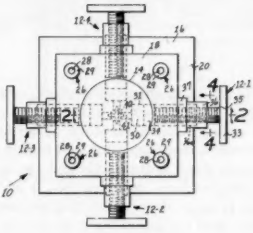
stationary stick loading means for supplying said sticks to said carriage.

3,859,020

CREATIVE TOY FOR PRODUCING OBJECTS HAVING PATTERNS OF VARIABLE COLORATION AND/OR DESIGN

Robert I. Rentz, 1818 Devils Backbone Rd., Cincinnati, Ohio 45238

Filed Mar. 19, 1970, Ser. No. 20,883
Int. Cl. B29f 1/12
U.S. Cl. 425—130 13 Claims



1. An injection molding toy for creating thin disc shaped objects of uniform thickness from flowable material by injection molding, said toy comprising:

an injection mold having a shallow molding cavity with a periphery, into which cavity flowable material can be injected to produce a thin disc;

said mold including a pair of cooperating molding members each defining a respective one of a pair of opposed, smooth, closely spaced mold surfaces disposed in substantial parallelism;

said cavity lying between said opposed surfaces and being substantially defined by said surfaces;

one of said members having at least one orifice therein communicating with said cavity through one of said surfaces and communicating with said cavity at a point remote from the periphery of said cavity;

at least one of said members including transparent viewing panel to permit at least a portion of said cavity to be visually observed when flowable material is injected into said cavity; and

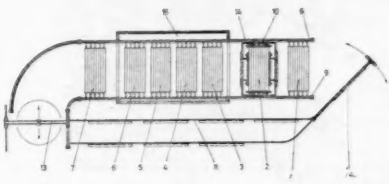
at least one injector mechanism communicating with said orifice to facilitate the sequential injection of successive charges of flowable material through said orifice and into said cavity, said mold surfaces being spaced sufficiently close to provide that each successive charge flows outwardly between said opposed mold surfaces to radially advance the preceding charge toward said periphery without substantial mixing of charges with said cavity, thereby producing a thin disc of uniform thickness having annular rings at increasingly larger radii which, throughout substantially the entire thickness thereof, correspond to said successively different charges of material.

3,859,021

APPARATUS FOR FORMING A BATCH OF CONCRETE PANELS

Armin Kleiber, Karlsruhe, Germany, assignor to Mannesmann-Kleiber GmbH, Karlsruhe, Germany

Division of Ser. No. 107,941, Jan. 20, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,508
Claims priority, application Germany, Feb. 10, 1970, 2005899
Int. Cl. B28b 1/08
U.S. Cl. 425—186 5 Claims



1. Apparatus for the batch production of cast slabs, said apparatus comprising:

a plurality of shuttering boards;

a conveyor, means at the start of said conveyor for forming said shuttering boards into batches with the shuttering boards in each batch being disposed vertically in spaced horizontal relation, means at a pouring station of said conveyor for pouring settable material into batches moved sequentially along said conveyor, vibration means for vibrating said batches at said pouring station, said conveyor further comprising a setting zone for batches moved along said conveyor from said pouring station, and a deshuttering station for dismantling each batch after the settable material has set so as to release the case slabs for removal; said vibration means comprising a frame dimensioned to surround a batch of shuttering boards, vibrating devices mounted on said frame, means for moving said vibrating devices into engagement with a batch when surrounded by said frame, and means mounting the frame at the pouring station for vertical movement into surrounding relation to a batch.

3,859,022

HIGH SPEED DOUGH DIVIDER WITH FERMENTATION GAS VENTS

Roger J. Gendron, Bridgeport, and Harvey E. Plant, Saginaw, both of Mich., assignors to Baker Perkins Inc., Saginaw, Mich.

Continuation of Ser. No. 307,271, Nov. 16, 1972, abandoned. This application Mar. 1, 1974, Ser. No. 447,162
Int. Cl. A21c 5/04
U.S. Cl. 425—203 3 Claims

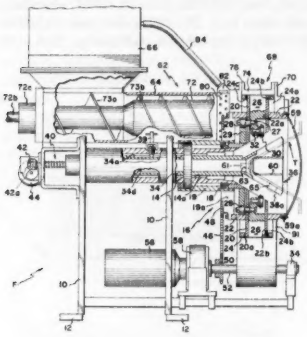
1. Apparatus for dividing material, such as bread dough and the like, into individual pieces comprising:

a frame;

a rotary divider head mounted thereon and having a plurality of peripherally spaced, material-receiving, scaling chambers in its peripheral surface;

material-supplying means for continuously, forwardly supplying material at a substantially constant pressure and density to said chambers at a material-supplying station past which said chambers move as said head is rotated, said material-supplying means comprising a dough pump device, with a driven dough forwarding element, having an outlet compartment partly peripherally surrounding said head to deliver dough to said chambers, and vent means incorporating multiple ports spaced generally around said forwarding element substantially at said outlet compartment to bleed off fermentation gases;

material ejecting means movable in said chambers between radially inner material-receiving positions, in which material is received in said chambers at said material-supplying station, and radially outer material ejecting



positions at a material discharge station downstream of said supplying station as said head is rotated to discharge the scaled material from said chambers in individual pieces; and

means for moving said material ejecting means.

3,859,023

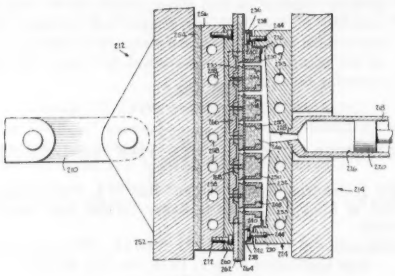
TRANSFER MOLDING APPARATUS

Lambert Pasch, Nutheim, Germany, assignor to Uniroyal A.G., Aachen, Germany

Filed Dec. 18, 1972, Ser. No. 316,164

Int. Cl. B29f *1/06*

U.S. Cl. 425—251 **37 Claims**



1. Apparatus for molding elastomeric stock, said apparatus comprising: a mold having at least one cavity for shaping and curing elastomeric stock in the form of said cavity; an elastomeric stock injection unit having a chamber in which elastomeric stock is disposable and can be subjected to pressure for transfer from said chamber; an apertured end plate carried by said injection unit in confronting relation with said mold, the aperture in said plate intercommunicating said chamber with said mold cavity, said plate being disposed at least in part in and movable axially relative to said chamber for reducing the axial extent of said chamber, said plate having an exposed end face engageable and forming a parting line with said mold; and means for moving said injection unit and mold relative to one another to effect engagement of said mold with said plate and thereby shift the latter inwardly of said chamber to reduce the axial extent of said chamber and expel elastomeric stock through said plate and into said mold cavity.

3,859,024

TRANSFER MOLDING APPARATUS

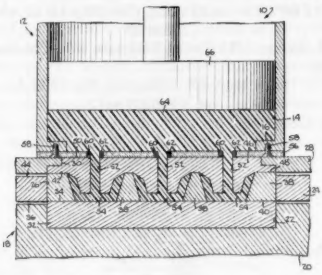
Lambert Pasch, Nutheim, and Heinz Wagemann, Aachen, both of Germany, assignors to Uniroyal A.G., Aachen, Germany

Filed Dec. 18, 1972, Ser. No. 316,165

Claims priority, application Germany, Dec. 23, 1971, 2164219

Int. Cl. B29f *1/06*

U.S. Cl. 425—251 **28 Claims**



1. Apparatus for molding elastomeric stock, said apparatus comprising: a mold provided with a plurality of mold cavities for shaping and curing elastomeric stock in the form of said cavities; an elastomeric stock injection unit having a chamber in which elastomeric stock is disposable and can be subjected to pressure for transfer from said chamber; a heat-resistant, flexible insulation plate positioned intermediate said mold and said injection unit, said insulation plate having flat, opposed, side faces which are capable of flexing in response to pressure thereagainst, at least one of said side faces forming a parting line between said mold and said injection unit, said insulation plate including a plurality of apertures therethrough for intercommunicating said injection unit with said mold cavities; means for heating said mold; and means for moving said mold and said injection unit relative to one another and said insulation plate in such a manner that said mold on one side face of said insulation plate and said injection unit and said elastomeric stock in said injection unit on the other side face of said insulation plate are pressed against the opposite side faces of said insulation plate to flexibly conform said insulation plate to, and tightly seal, varying surface irregularities of said mold and said injection unit pressing thereagainst; whereby upon exertion of pressure in said chamber against said elastomeric stock a portion of said stock will be expelled from said chamber and concurrently transferred through each of said plurality of apertures into the cavities of said heated mold to fill said cavities under substantially uniform fluid pressure without seepage of said elastomeric stock between said mold or said injection unit and said insulation plate, said insulation plate serving to thermally insulate the remaining portion of elastomeric stock in said chamber from said heated mold, without separation of said mold or said injection unit from said insulation plate or relaxation of said fluid pressure, in order to prevent the curing of said remaining portion of stock with the curing of said transferred portion of stock.

3,859,025

APPARATUS FOR MAKING CORRUGATED PLASTIC PIPES WITH INTEGRAL COUPLER COLLAR

Ernest J. Maroschak, P.O. Box 878, Roseboro, N.C. 28382

Continuation of Ser. No. 271,225, July 13, 1972,. This application Dec. 20, 1972, Ser. No. 316,825

Int. Cl. B29d *23/03*

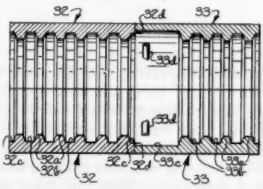
U.S. Cl. 425—302 B **10 Claims**

1. Apparatus for continuously making plastic pipes, each having an elongate tubular corrugated body and an enlarged

coupler collar provided with latching members on one end of the body, said apparatus comprising,

an extruder for continuously extruding hot plastic naterial in the form of a tube.

a series of cooperating pairs of forwardly moving die blocks defining a molding zone for receiving and molding the tube of hot plastic material, most of the pairs of die blocks being body-forming die blocks having an annularly corrugated concave inner surface defining at body-forming mold cavity, at least one of the cooperating pairs of die blocks being collar-forming die blocks having non-corrugated generally cylindrical inner surface portions defining a collar-forming mold cavity of greater diameter than said body-forming mold cavities, said pair of collar-forming die blocks also having a plurality of arcuately spaced, relatively small projections carried by and extending inwardly from said generally cylindrical inner surface portions for forming inwardly projecting latching members on each collar being molded, said projections



defining areas of smaller internal diameter to aid in engaging the hot plastic material for stabilizing the same in the surrounding areas of said greater diameter cylindrical mold cavity to prevent migration of the hot plastic material,

means for creating a pressure differential in said molding zone of a higher pressure inside the hot plastic tube as compared to the outside of the tube to expand the hot plastic tube against said mold cavities and thereby form a series of successive, closely spaced elongate corrugated tubular bodies with interconnected relatively short collars having integrally formed latching members, between the adjacent corrugated tubular bodies, and

tube severing means spaced downstream of said molding zone for successively transversely severing the tube along the juncture between the end of the enlarged collar and the adjoining tubular corrugated body to thereby form a plurality of pipes, each having at one thereof a relatively short integral enlarged coupler collar having integrally formed latching members thereon.

3,859,026

HAYCUBER

Glen E. Osborn, Star Rt., Box 265, Moses Lake, Wash. 98837

Filed Feb. 29, 1972, Ser. No. 230,218

Int. Cl. B29c *3/00*; **A01d** *43/00*

U.S. Cl. 425—331 **5 Claims**

1. A haycuber, comprising

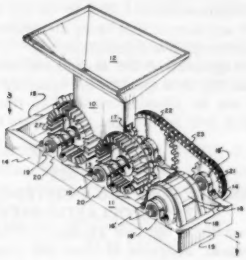
a frame including a pair of rectilinear support beams held in suitable, parallelly disposed, relationship by means of crossties;

a hopper operable to collect and feed hay material to said haycuber, said hopper being suitably mounted to said frame;

a bottomless gear assembly including an engine suitably mounted on said frame;

haycubing dies, said dies including a plurality of outwardly projecting teeth suitably fastened about the circumferance of a dish-like rim in spur gear-like fashion, said dies including a hollow-centered ring fastened to said teeth with the outer circumference of said ring parallel to said rim, said dies being mounted suitably, interlockingly, parallelly on shafts fastened respectively to the centers of said rims and said shafts being mounted on said frame on journal bearings, said engine being connected to one of said die shafts by drive means;

said dies including a plurality of rows of teeth, said rows fastened in alternating fashion with a die tooth of one row fastened adjacent to a die tooth void of a another row; and



each of said teeth includes dedendam portion and an addendum portion, said dedendum portion having a substantially rectangular transverse configuration operable for mounting said tooth to said rim and said ring, each of said teeth including an addendum portion including a substantially convexly curved tooth profile.

3,859,027

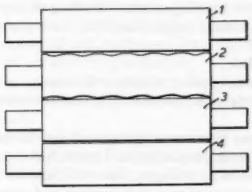
MULTI-ROLL CALENDER FOR PLASTIC MATERIAL

Jakob Messner, 66 Unterschauersberg, A-4600 Wels, Thalheim, Austria

Continuation-in-part of Ser. No. 52,482, July 6, 1970, abandoned. This application Sept. 20, 1972, Ser. No. 290,641

Int. Cl. B29c *15/00*

U.S. Cl. 425—363 **3 Claims**



1. A calender comprising:

a first cylindrical roll having a smooth profile;

a second roll co-operating with the first roll to form a first laterally-uninterrupted nip and having peripherally extending corrugations spaced along the length of the roll to form crests and troughs;

a third roll having a smooth profile; and

a fourth roll having a smooth profile and co-operating with the third roll to provide a second nip downstream of the first nip;

said second roll having the following characteristics at the median line of the corrugations:

a. the ratio of the length of each crest to the width of each trough being within a range of approximately 1:2 to 2.5:1,

b. the ratio of the width of each trough to the depth of each trough being within a range of approximately 2:1 to 5:1, and

c. the ratio of the length of each crest to the trough depth being within a range of approximately 8:1 to 2:1;

said first and second rolls having together the following characteristics:

a. the ratio of the diameter of the first roll to the diameter of the second roll being within the range of approximately 3.5:1 to 1:2,

b. the ratio of the peripheral speed of the first roller to the peripheral speed of the second roll being within a range of approximately 1.20:1 to 1:1.20; and

the first and second nips being arranged to receive a web in the same relative orientation, and

the corrugations of the second roll serving as means to reduce the time spent by the squeezed-out material at the first nip by allowing material in the standing ridge to migrate into the troughs and so pass through the nip.

3,859,028

MANDREL FOR PLUG ASSISTED SHAPING OF THERMOPLASTIC SHEETS

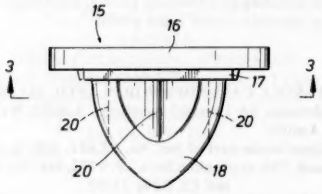
Gerrit Van der Gaag, and Thomas C. Tomey, both of Delft, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Mar. 2, 1973, Ser. No. 337,329

Claims priority, application Great Britain, Mar. 21, 1972, 13130/72

Int. Cl. B29c *17/02*

U.S. Cl. 425—403 **5 Claims**



1. Mandrel for plug-assisted shaping of thermoplastic sheet into noncircular cupped articles having rounded corners, comprising

a base plate,

a rim-forming plate attached thereto,

a plug body attached to said plates, said plug body comprising

an upper portion, adjacent said rim-forming plate, which, in planes parallel to said plate, has the configuration of a modified polygon, the modification in cross-section, consisting of rounded corners and concave indentation of the sides comprising from 70 to 100 percent of the spans between corners, and

a lower portion converging from said indented to an unindented configuration said unindented lower portion of the plug body being approximately elliptical in cross-section in planes parallel to the said plate and appoximately parabolic in cross-section in planes perpendicular to the said plate.

3,859,029

SNOW MOLDING APPARATUS

Steven Joseph Kammer, 80-19 Myrtle Ave., Glendale, N.Y. 11227

Filed Jan. 7, 1974, Ser. No. 431,069

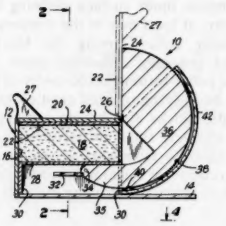
Int. Cl. B29c *1/00*, *7/100*

U.S. Cl. 425—441 **9 Claims**

1. A molding apparatus comprising:

a molding frame including a lower portion of a mold cavity, said mold cavity being adapted to mold a moldable material into the shape of said mold cavity under the influence of pressure applied to the top surface of said material;

pressure means pivotally connected to a top edge of said molding frame, said pressure means including a mating coacting upper portion of said mold for movement toward and away from one another for applying pressure to said top surface of said molding material;



ejecting means cooperating with the lower portion of said mold cavity and being movably mounted therein for ejecting said molding material from said mold cavity; and activating means operably connected to said pressure means and said ejecting means for causing said ejecting means to eject said moldable material when said pressure means is moved away from said lower mold cavity and retract said ejecting means when said pressure means is moved toward said lower mold cavity portion.

3,859,030

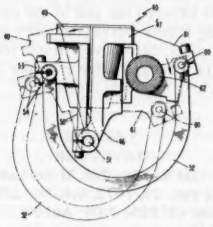
APPARATUS FOR AND METHOD OF MAKING PASTRY CUPS AND THE LIKE

Arthur J. Griner, Wyckoff, and Daniel Anthony Koppa, Bloomfield, both of N.J., assignors to Nabisco, Inc., New York, N.Y.

Division of Ser. No. 103,707, Jan. 4, 1971,. This application May 1, 1973, Ser. No. 356,203

Int. Cl. B29c *1/16*

U.S. Cl. 425—450.1 **9 Claims**



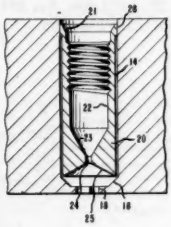
1. In molding apparatus, a split mold comprising a first, relatively fixed mold part and a second mold part movable relative thereto and cooperable therewith to form a cavity, and means for opening and closing the mold comprising a crank arm journalled on one of the mold parts and extending generally away from the other mold part, a link in the form of a tension spring extending from the outer end of the crank arm to the other mold part, and means for oscillating the crank arm between a mold-closed position, wherein the crank arm lies beyond dead center in one direction with the spring under marked tension to hold the mold closed, and a mold-open position, wherein the crank arm lies beyond dead center in the other direction with the spring relatively relaxed.

3,859,031

SPINNERET CAPILLARY METERING PLUGS

Curtis Owen Hawkins, Cove City, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 10, 1973, Ser. No. 358,858
Int. Cl. D01d 3/00
U.S. Cl. 425—461 3 Claims



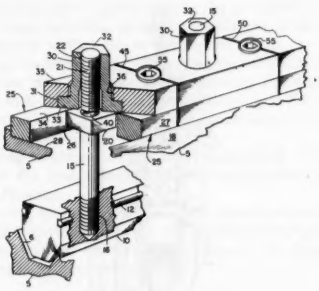
1. A spinneret for melt spinning fibers from a polymeric material comprising: a plate having upper and lower surfaces connected by a passage, said passage have successive cylindrical, tapered and capillary lengths, and an insert fitted in said passage, said insert having a central axial bore in alignment with said capillary length, there being a concentric restriction in one end of said bore, said one end being adjacent said tapered length, said restriction being sized to provide a resistance to flow of the fiber forming polymeric material which is greater than the resistance to flow of the fiber forming material by the capillary length.

3,859,032

ADJUSTING MECHANISM FOR RESTRICTOR BAR OF A SLOT EXTRUSION DIE

Vernon J. Krupa, Chippewa Falls, Wis., assignor to Extrusion Dies, Incorporated, Chippewa Falls, Wis.

Filed Nov. 28, 1973, Ser. No. 419,710
Int. Cl. B29f 3/00
U.S. Cl. 425—466 4 Claims



1. In a slot extrusion die having a die body and an adjustable internal elongated restrictor bar for adjusting slot size, mechanism for external adjustment of the internal restrictor bar, comprising:

a plurality of spaced studs secured to the elongated restrictor bar and extending through openings in the die body beyond the exterior surface of the body, each stud having a non-circular intermediate portion of minor length exterior of the body and threads on the outer end portion;

key means detachably secured to the die body in effective relation with said non-circular stud portions for preventing stud rotation and permitting axial stud movement, the dimension of said key means in direction of stud movement being greater than the axial length of said non-circular stud portions;

an elongated threaded nut on the outer end portion of each stud, each nut having a flange spaced from the outer nut end; and

nut retainer means overlying said nut flanges and said key means, said nut retainer means detachably secured with respect to the die body and having openings therethrough, said elongated nuts extending through and beyond said openings,

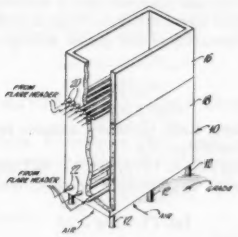
whereby actuation of said nuts causes non-rotational axial movement of said studs in either direction and consequent adjustment of the elongated restrictor bar.

3,859,033

SEQUENTIAL COMBUSTION OF WASTE GASES

William L. Buchanan, Sparta, and Arthur C. Worley, Mendham, both of N.J., assignors to Exxon Research Engineering Company, Linden, N.J.

Filed Mar. 7, 1973, Ser. No. 338,735
Int. Cl. F23d 13/20
U.S. Cl. 431—5 13 Claims



1. A method of burning waste gases without premixing of air and gas comprising:

a. introducing a first fraction of said gases uniformly across a first combustion zone established within a hollow enclosure open at the top and bottom wherein said first fraction is burned in a large excess of air induced through the bottom opening of said enclosure into said first zone by natural draft created by combustion;

b. flowing the combustion products from said first zone upward into a second combustion zone established within said enclosure;

c. introducing the remaining fraction of said gases into said second zone wherein said remaining fraction is burned in the presence of combustion products and air from said first zone;

d. discharging the combustion products and air from said second zone through the top opening of said enclosure.

3,859,034

PILOT BURNER AND PILOT FLAME HOOD THEREFOR

John C. Heyde, Franklin, and Michael F. Grace, Brentwood, both of Tenn., assignors to Apcom, Inc., Franklin, Ill.

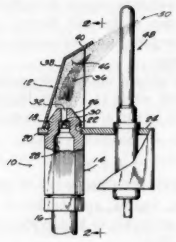
Filed Oct. 31, 1973, Ser. No. 411,453
Int. Cl. F23n 5/10
U.S. Cl. 431—80 11 Claims

1. A pilot burner and a pilot flame hood combination comprising:

a pilot burner means including an orifice fitting having a central bore with a central axis and a nose portion through which gas flows to atmosphere for burning as a pilot flame; and

a pilot flame hood means comprising a pair of spaced parallel sidewalls, a rear wall extending between the rear edges of the spaced sidewalls and a roof wall extending from

said rear wall between the top edges of said sidewalls, said sidewalls, rear wall and roof wall together forming a partially enclosed gas/air mixing chamber surrounding the nose portion of said orifice fitting, said rear wall angling over the central axis of said orifice fitting and said roof wall angling upwardly from the top of said rear wall

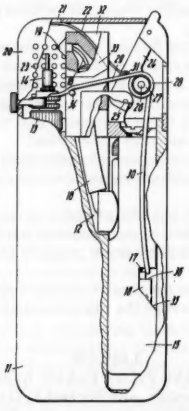


so that the pilot burner flame will extend initially from said orifice nose portion into the gas/air mixing chamber along said central axis of said orifice fitting until it impinges on the said rear wall and is deflected thereby to said roof wall where the flame is again deflected by said roof wall outwardly of said gas/air mixing chamber.

3,859,035
GAS LIGHTER

Hermann Schlamp, Koln, Germany, assignor to Ronson Corporation, Woodbridge, N.J.

Filed Dec. 6, 1973, Ser. No. 422,286
Claims priority, application Germany, Nov. 28, 1972, 2259024
Int. Cl. F23q *2/28*
U.S. Cl. 431—255 **10 Claims**

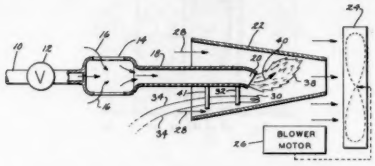


1. Gas lighter or similar apparatus comprising a liquid gas container, a burner valve connected to said liquid gas container and displaceable between an opened position and a closed position, a piezo electric ignition unit for igniting a gas flow issuing from the open burner valve, and means arranged for opening and closing said burner valve and for actuating said ignition unit, wherein the improvement comprises that said means include a pivotally mounted handle, an intermediate member pivotally mounted on said handle and displaceable therewith in resonse to the movement of the handle, and said intermediate member comprises a pair of elastically spreadable arms extending angularly relative to one another with one of said arms arranged to open and close said burner valve and the other of said arms arranged to actuate said ignition unit.

3,859,036
GAS IGNITION SYSTEM

Spencer C. Schantz, 16608 W. Rogers Dr., New Berlin, Wis. 53151

Filed Sept. 21, 1973, Ser. No. 399,642
Int. Cl. F23n *7/06*
U.S. Cl. 431—263 **10 Claims**

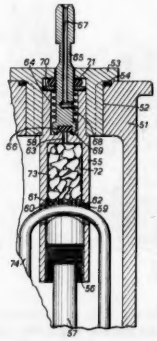


1. In a flame lighter including an electric circuit, a resistance heater, a gas valve solenoid, and a fuse connected in series with each other across a power source in said circuit, an electrode having an opening therein mounted to surround said resistance heater and make electrical contact therewith if said heating element is moved beyond a predetermined amount or if a conductive foreign body enters the area, said electrode being coupled in said circuit to the side of said power source opposite said fuse, said fuse being of such size as to accommodate the normal current flow through said series circuit but to open if shorting occurs.

3,859,037
LIGHTER

Walter Mohr, Frankfurt/Main, Germany, assignor to Braun Aktiengesellschaft, Frankfurt/Main, Germany

Filed Feb. 26, 1973, Ser. No. 335,840
Claims priority, application Germany, Mar. 1, 1972, 2209683
Int. Cl. F23d *13/04*
U.S. Cl. 431—344 **14 Claims**



1. In a lighter device including burner valve means and electrode means, means for storing and discharging lighter fluid, having a container for storing the fluid and a discharge conduit for the discharge of the fluid from the container,

in combination,

sorption means for the removal by binding of fats and oils from the fluid being in communication with the fluid for contact with at least a portion of the fluid, thereby preventing detrimental contamination of said burner valve means and said electrode means.

3,859,038
METHOD OF USING WORKPIECE TRANSPORTING APPARATUS

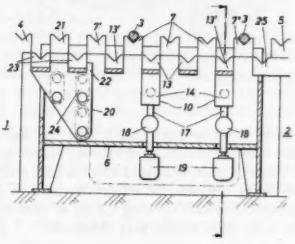
Edgar Stengel, Wuppertal-Hahnerberg, and Friedhelm Emde, Huckeswagen, both of Germany, assignors to AEG-Elotherm, G.m.b.H., Remscheid-Hasten, Germany

Filed Mar. 15, 1974, Ser. No. 451,608

Claims priority, application Germany, Mar. 15, 1973, 2312902

Int. Cl. F27b 9/14

U.S. Cl. 432—5 **1 Claim**



1. A process for the operation of an arrangement for the heat treatment of workpieces consisting of a first automatically operating heat treatment apparatus to which the workpieces are fed on the input side in which they are treated and from which they are removed on the outlet side, a second apparatus to which are fed gradually the work pieces taken from the first apparatus, on the input side, and of a storage and conveying arrangement, disposed between the outlet of the first and the inlet of the second apparatus, for the conveyance of the workpieces, the storage and conveying arrangement having a series of nests for workpieces disposed along its conveying path in succession and an occupancy detector associated each nest for indicating occupancy of the associated nest and, between locally adjacent nests for workpieces, transfer device for transferring workpieces from one nest to the next following nest in the direction of conveyance, and means for controlling the transfer devices when the nest located behind in the direction of conveyance is occupied, and the succeeding nest is unoccupied in the direction of conveyance, the steps including, in case of breakdown of the feed for the workpieces to the inlet of the second device,

signaling the workpiece feed to the inlet of the first device to cease operation when the occupancy detector associated with the nest for workpieces lying in front in the direction of conveyance indicates occupancy for greater than predetermined time period,

continuing treatment of the workpieces which at this time are in the first apparatus and already under treatment until finished,

transferring those workpieces when completed to the storage and conveying device and transferred in said device by the transfer devices to the last, in the direction of conveyance, unoccupied nest.

3,859,039
PLANETARY COOLER FOR ROTARY TUBE FURNACE

Otto Heinemann, Ennigerloh; Heinz-Herbert Schmits, Rheda, and Hans Schulz, Rheinhausen, all of Germany, assignors to Polysius AG, Newbeckum, Germany

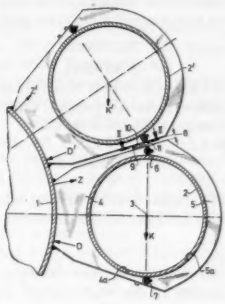
Filed Feb. 19, 1974, Ser. No. 443,812

Claims priority, application Germany, Feb. 28, 1973, 2309883

Int. Cl. F27b 7/02, 7/38

U.S. Cl. 432—80 **10 Claims**

10. A rotary furnace construction comprising a rotary tube, a plurality of cooling tubes encircling said rotary tube in planetary arrangement; and means mounting each of said cooling tubes on said rotary tube, said mounting means comprising an individual holder for each of said cooling tubes fixed to said rotary tube and having an aperture therein in which the associated cooling tube is accommodated, adjacent ones of said



holders being spaced from each other by a gap to permit thermal expansion thereof peripherally of said rotary tube, and abutments on adjacent ones of said holders in abutting engagement radially of said rotary tube.

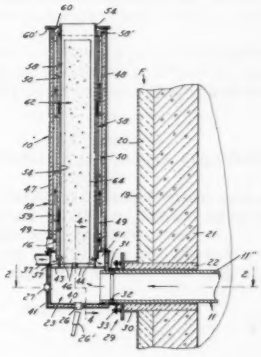
3,859,040
RECUPERATOR FOR GAS-FIRED RADIANT TUBE FURNACE

Paul K. Shefsiek, Farmington, Mich., and Carroll Cone, Toledo, Ohio, assignors to Holcroft & Company, Livonia, Mich.

Filed Oct. 11, 1973, Ser. No. 405,442

Int. Cl. F23l 15/04

U.S. Cl. 432—214 **17 Claims**



5. The combination with a furnace of the type having an internally heated radiating tube unit in communication with the furnace exterior, of a recuperator unit mounted externally of said furnace and providing an upright and vertically elongated stack structure, said structure including an external insulated outer tubular wall portion and inner and outer separator shells disposed in radially spaced relation to one another within said wall portion, said shells defining combustion air and combustion product circulating zones within said wall portion, the combustion air circulating zone defined by said shells comprising a pair of parallel, radially separated annular air-circulating passages extending vertically and in communication with one another adjacent an axial end thereof, including a first annular passage whose cross sectional area in a plane at 90° to the axis of said stack structure is at least a substantial multiple of the corresponding cross sectional area

of the other air-circulating passage, said first passage of larger area being in communication with a source of combustion air, the other passage being in communication with the leg of the furnace radiating tube unit, the stack structure also including a central inner space within said shells which at least in part affords the combustion product-circulating zone, being in communication with the radiating tube unit.

3,859,041

MUFFLE FURNACE WITH SIGHTING ASSEMBLY

Donald L. Winslow, Lake Arrowhead, Calif., assignor to The J. M. Ney Company, Bloomfield, Conn.

Filed Jan. 21, 1974, Ser. No. 434,815

Int. Cl. F27b *5/00*

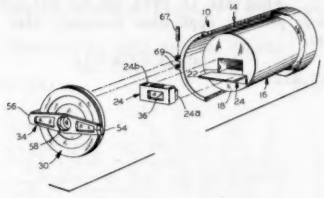
U.S. Cl. 432—250 **8 Claims**

1. In a muffle furnace with viewing means operable for viewing into the interior of the furnace, the combination comprising:

a. a support;

b. a muffle on said support and having a chamber therein and an opening in one wall thereof affording access to said chamber, said muffle including a door having an opening therethrough and supported on said muffle to close said opening therein, and said door including transparent window means traversing said opening therein operable for viewing said chamber of said muffle; and

c. viewing means separately supported on said support in outwardly spaced relationship to said door in alignment with said window means, said viewing means including a



transparent window port larger in cross sectional area than said window means, said viewing means and window means when aligned with said door in said muffle closing position being operable to cause the field of vision of a user outwardly of said viewing means to converge so as to focus at a location within said chamber.

3,859,042

CONTINUOUS JET PRESSURE STEAMING OF SOLID STATE POLYMERIZED POLYESTER FILAMENTS WITH LESS THAN 22 MEG/KG COOH AND AN INTRINSIC VISCOSITY OF AT LEAST .75 DL.

Brian Armstead Dementi, Richmond, and Stanley David Lazarus, Petersburg, both of Va., assignors to Allied Chemical Corporation, Morristown, N.J.

Filed July 31, 1972, Ser. No. 276,503
Int. Cl. C08g *17/003*
U.S. Cl. 8—115.5 **2 Claims**

1. In a process for preparing polyethylene terephthalate tire cord from polyethylene terephthalate polymer chips having an intrinsic viscosity less than 0.75 dl. per gram and greater than 22 meg/kg. carboxyl end groups, wherein said polymer chips are heated under solid state polymerization conditions until the polymer has an intrinsic viscosity greater than 0.75 dl. per gram and less than 22 meg/kg. carboxyl end groups, melt-spinning and drawing said polymer to form a polyethylene terephthalate yarn, and forming tire cord from said yarn by plying and twisting three ends of said yarn, the improvement comprising passing said tire cord through a steam jet at a rate of about 50 feet per minute to about 12,000 feet per minute, said steam having a jet pressure of about 50 p.s.i.g. to about 300 p.s.i.g., and a temperature of about 200°C. to about 400°C., whereby the adhesion bond strength of the tire cord to rubber is improved without significant change in the overall intrinsic viscosity of the polyester in said tire cord.

3,859,043

TREATMENTS FOR IMPROVING THE PROCESS AND YIELD OF CARBON FIBERS OBTAINED FROM THE PYROLYSIS OF RAYON YARN

James V. Duffy, Beltsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 2, 1972, Ser. No. 231,343
Int. Cl. D06m *1/00*
U.S. Cl. 8—116 P **26 Claims**

1. A process for modifying the properties of cellulosic yarn comprising treating said yarn with a solution of a compound selected from the group consisting of bis(chlorodiphenylphosphine)decaborne and dimeric chlorophospha (III)-o-carborane, in order to react the compound with the yarn.

3,859,044

PROCESS FOR BLEACHING GOODS DURING DRYCLEANING

Rodney A. Blomfield, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Sept. 27, 1972, Ser. No. 292,538
Int. Cl. D06l *1/22*
U.S. Cl. 8—142 **4 Claims**

1. An improvement in the method for bleaching textile fabrics in a drycleaning solvent having emulsified therein an oxidizing agent capable of effecting the desired bleaching, which improvement comprises adding to said solvent, subsequent to completion of the desired bleaching reaction but prior to the removal of the solvent from the textile fabric, a mixture of an alkali metal sulfite and thiosulfate, the alkali metal sulfite constituting from 50 to 95 percent of the alkali metal sulfite/thiosulfate and the amount of said mixture used being at least that sufficient to react with the remaining oxidizing agent in the solvent.

3,859,045

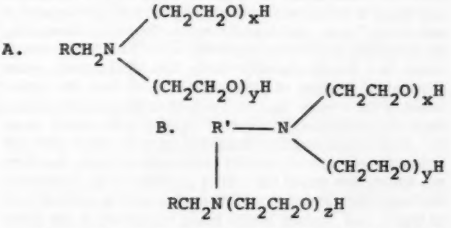
ETHOXYLATED ALIPHATIC TERTIARY AMINES TO REDUCE OZONE ATTACK ON DYES IN POLYAMIDE FIBERS

Robert Alden Lofquist; Peter Reginald Saunders, and Richard Eugene Mayer, all of Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 165,352, July 22, 1971, abandoned. This application Apr. 3, 1972, Ser. No. 240,812
Int. Cl. D06p *5/02*
U.S. Cl. 8—165 **10 Claims**

1. In a method for dyeing polycarbonamide fibers said polycarbonamide having a preponderance of terminal carboxyl groups or is a polyarbonamide with a large number of sulfonate groups along the polymer chain with anthraquinone dyes the improvement comprising

coating said fiber with a substance consisting essentially of a compound selected from the group consisting of tertiary amines and ditertiary amines of the formula



or mixtures of them where R is straight chain alkyl, branched chain alkyl or aralkyl containing 7 to 24 carbon atoms, said R can contain up to two oxygen atoms as ester or ether linkages, R′ is a straight chain alkylene radical having 2 to 10 carbon atoms, and x, y and z are each at least 1 and x, y and z total not more than 15,

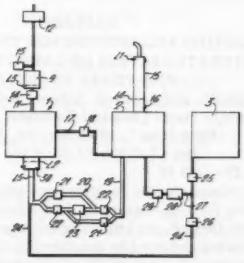
so that from about 0.1 to about 8 percent on weight of fiber of said compound remains on said fibers to reduce the fading of dyed polycarbonamide fabrics caused by ozone.

3,859,046

APPARATUS AND PROCESS FOR THE TREATMENT OF TIMBER

Robert Gillander Hurst; Alan Leonard Pinner, both of High Wycombe, and Colin Trevor Kyte, Marlow, all of England, assignors to Fosroc A.G., Zug, Switzerland

Filed Aug. 21, 1972, Ser. No. 282,513
Claims priority, application Great Britain, Aug. 23, 1971, 39456/71
Int. Cl. B27k *3/10*
U.S. Cl. 21—65 **8 Claims**



1. Apparatus for the impregnation of timber with preservative liquid under pressure, comprising a vessel for treating the

timber, a storage vessel for preservative liquid, means for producing a vacuum in said timber vessel and transfer means for transferring liquid between the timber vessel and the storage vessel, the timber vessel communicating with first and second chambers, each of said chambers being of relatively smaller cross-sectional area than the timber vessel, the first chamber being located above the timber vessel to receive preservative liquid when the timber vessel is full and the second chamber being located below the timber vessel to effect the passage of preservative liquid between the timber vessel and the storage vessel, said first chamber including level sensing means, said vacuum means producing a predetermined vacuum in said timber vessel to suck air from the timber disposed within said timber vessel, said transfer means transferring liquid from the storage vessel to the timber vessel in automatic response to the attainment of a predetermined partial vacuum in said timber vessel, the liquid level sensing means in said first chamber causing the transfer of liquid from the storage vessel to the timber vessel to cease upon the attainment of the predetermined level of liquid in said first chamber, means for increasing the pressure within said timber vessel after said vessel is full of the preservative liquid, whereupon said liquid is forced into the timber by the pressure induced in said timber vessel, said transfer means thereafter transferring the remaining liquid from the timber vessel back to the storage vessel, said second chamber having first level sensing means causing the transfer of preservative liquid from the timber vessel to the storage vessel to cease in response to the attainment of a predetermined level of liquid in said second chamber, said storage vessel communicating at its upper end with a chimney of relatively smaller cross-sectional area, the chimney having first means for sensing an initial level of preservative liquid therein and second means for sending the final level of liquid, said vacuum means being responsive to the initial level of liquid in the chimney for drawing an initial vacuum in the timber vessel.

3,859,047

STANDARD FOR SERUM CHOLESTEROL DETERMINATION

Bernard Klein, New Hyde Park, N.Y., assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed May 29, 1973, Ser. No. 364,789
Int. Cl. G01n *33/16*
U.S. Cl. 23—230 B **3 Claims**

1. A method of checking the accuracy of a test for the quantitative determination of the cholesterol content of a biological fluid which comprises conducting said test on a standard comprising a solution in said biological fluid of a known quantity of a water-soluble cholesterol salt selected from the group consisting of the morpholine, cyclohexylamine and tris (hydroxymethyl) aminomethane salts of cholesteryl hemisuccinate.

3,859,048

COMPOSITION AND METHOD FOR THE PREPARATION OF DEUTERATED ESTERS OF CARBOXYLIC ACIDS FOR GAS PHASE ANALYSIS

Paul K. Smith, and Larry R. Schewe, both of Rockford, Ill., assignors to Pierce Chemical Company, Rockford, Ill.

Filed June 7, 1973, Ser. No. 367,834
Int. Cl. G01n *31/08;* **C11c** *3/08*
U.S. Cl. 23—230 M **15 Claims**

1. In a process for the gas phase analysis of carboxylic acids comprising forming deuterated derivatives of said acids prior to analysis thereof, the improvement wherein the deuterated derivatives are prepared by reacting the carboxylic acids with a mixture consisting essentially of a deuterated alcohol having up to about four carbon atoms and dimethylformamide dineopentyl acetal.

3,859,049

BLOOD REFERENCE STANDARD AND PROCESS FOR BLOOD GAS TEST

Arnold G. Ware, 4044 Park Vista Dr., Pasadena, Calif. 91107, and Edward P. Marbach, 4607 Marwood Dr., Los Angeles, Calif. 90065

Continuation-in-part of Ser. No. 397,347, Sept. 14, 1973, abandoned. This application Feb. 1, 1974, Ser. No. 438,866
Int. Cl. G01n *33/16*
U.S. Cl. 23—230 B **11 Claims**

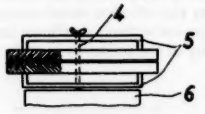
1. A reference standard containing blood, blood cells, hemoglobin, or the like, reconstituted by the addition of a fluoride and an iodoacetate or a fluoroacetate.

3,859,050

DEVICE FOR BIOCHEMICAL AND ENZYMATIC ANALYSIS

Anton Horn, 20, Oberdorf, Jena-Wollnitz, District of Gera; Klaus Thielmann, 5, Sonnenbergstrasse, Jena, District of Gera, both of Germany; Otto Pfeifer, deceased, late of 32, Hermann-Lons-Strasse, Jena, Germany, and Klaus Schilling, Siedlung 13, Bad-Klosterlausnitz, District of Gera, Germany

Filed May 1, 1972, Ser. No. 251,535
Int. Cl. G01n *33/16, 21/24*
U.S. Cl. 23—253 R **3 Claims**



1. A device for carrying out biochemical analysis in the ultra-micro range, particularly for mixing micro-volumes of at least one sample with at least one reagent,
comprising
two plates for being assembled in close contact on one another,
each of said two plates having a contact face being provided with cavities of substantially the same size;
the cavities in the one of said two plates receiving the sample;
the cavities in the other of said two plates receiving the reagent;
said two plates being assembled and said cavities being arranged in a manner that the cavities in the one of said plates register with the cavities in the other of said plates, thus forming reaction cells;
one vibrator, and
clamping means for ensuring the secure mount of the assembled
plates on said vibrator;
said vibrator being adapted to shake the assembled plates and to mix said sample and said reagent, both enclosed therein.

3,859,051

MEANS FOR TRANSFERRING A LIQUID IN A CAPILLARY OPEN AT BOTH ENDS TO AN ANALYZING SYSTEM

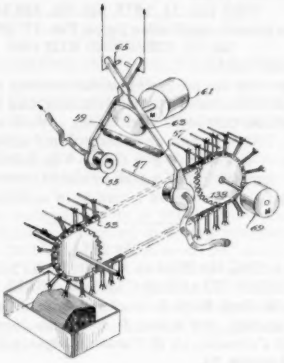
Samuel Natelson, Chicago, Ill., assignor to Rohe Scientific Corp., Santa Ana, Calif.

Filed Aug. 16, 1973, Ser. No. 388,945
Int. Cl. G01n *1/14, 1/18*
U.S. Cl. 23—259 **16 Claims**

1. An arrangement for introducing minute quantities of a liquid sample into an analytical system comprising in combination:
a. moving means moving along a predetermined travel path to a work station having thereon retaining means for

horizontally retaining a plurality of sample containing capillaries open at both ends in parallel;

b. means for sequentially presenting said capillaries to said work station; and,



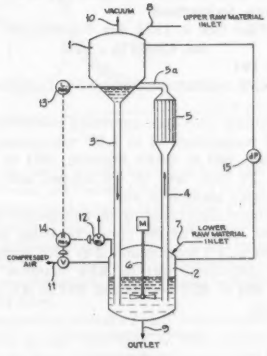
c. sealing means operatively connected to said work station for sequentially sealing the capillaries into the work station without leakage.

3,859,052

CRYSTALLIZATION APPARATUS HAVING PRESSURE-LIQUID LEVEL CONTROL MEANS

Hans Walther, Ladenburg, Germany, assignor to Joh. A. Benckiser, Chemische Fabrik GmbH, Ludwigshafen/Rhein, Germany

Filed Aug. 15, 1972, Ser. No. 280,928
Int. Cl. B01d *9/02*
U.S. Cl. 23—273 R **15 Claims**



1. A crystallization apparatus for a liquid containing a material in solution comprising;

a vacuum and a crystallization chambers;

first and second conduit means connecting said chambers, and said liquid partially filling each of said chambers and circulating from said vacuum to said crystallization chamber through said first conduit means and from said crystallization to said vacuum chamber through said second conduit means;

means for establishing in said vacuum chamber a vacuum; and said crystallization chamber having means adapted to control the liquid level in said crystallization chamber relative to the liquid level in the vacuum chamber said last-named means being adapted with pressure means controlling the pressure in said crystallization chamber above atmospheric thereby controlling the liquid levels in the crystallization chamber and the vacuum chamber at predetermined levels with respect to each other; said levels being adjusted when required by changes in the density of the liquid being crystallized; and

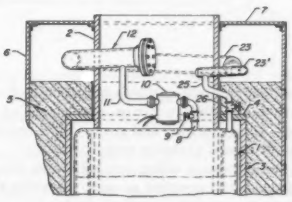
means for causing in said second conduit means the flow of vapor bubbles of said solution toward said vacuum chamber.

3,859,053

RECOMBINER FOR DISSOCIATED HYDROGEN AND OXYGEN

Marvin Jay Parnes, Norwalk, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 27, 1972, Ser. No. 301,698
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 R **6 Claims**



1. A compact tubular-form catalytic recombiner unit, particularly adapted to return resulting water condensate to the upper end of a containment vessel having radiologically formed H_2 and O_2, which comprises in combination:

a. a circular-form tubular reactor section having inlet and outlet means thereto and containing gas pervious all metal catalytic material for recombining H_2 and O_2;

b. a heater means in contact with the inlet end portion of said reactor section to heat incoming gaseous components;

c. a gas-vapor pumping means connective with the inlet means to said reactor section;

d. a circular tubular-form vapor condensation section directly adjacent to and in an insulated connection with the outlet end of said reactor section;

e. with said insulated connection incorporating at least one non-conductive barrier means interposed between the outlet of the reactor section and the inlet to said vapor condensation section;

f. cooling means connective with said vapor condensation section to provide for resulting liquid H_2O; and,

g. condensate outlet means from the latter section whereby to return H_2O to the containment vessel.

3,859,054

CLAMSHELL PRESSURE VESSEL

Harvey E. Morgan, Salisbury, N.C., assignor to Brad Ragan, Inc., Spruce Pine, N.C.

Filed Jan. 22, 1973, Ser. No. 325,375
Int. Cl. B01j *3/00*; **B29h** *17/36*
U.S. Cl. 23—290 **10 Claims**

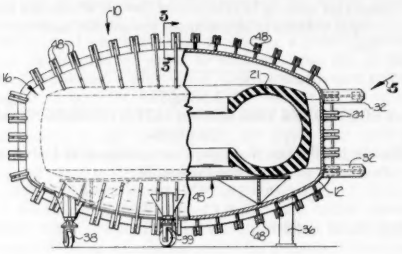
1. A generally ellipsoidal pressure vessel adapted to facilitate transport and erection and comprising:

first and second vessel shell portions each having a thin wall lying generally along the surface of one-half of an ellipsoid of revolution of an ellipse about its minor axis, the halves being formed by the division of the ellipsoid by a plane which includes said minor axis, each of said shell

portions having an open mouth defined by said division along said axis,

fixed mounting means for supporting one of said shell portions in a fixed position, and

movable mounting means for supporting the other of said shell portions for movement between a closed chamber position in which said mouths abut and said shell portions cooperate in forming a sealed pressure vessel and an open



chamber position in which said mouth of said other shell portion is withdrawn from said mouth of said one shell portion for insertion and removal of a toroidal object into and from said pressure vessel,

said shell portions being separable one from another for transport and erection so as to minimize the bulk of the pressure vessel during transport while maximizing the dimensions of toroidal objects receivable therewithin.

3,859,055

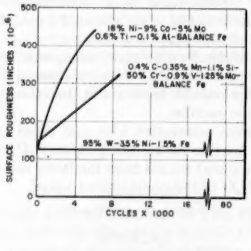
TUNGSTEN-NICKEL-IRON SHAPING MEMBERS

Earl I. Larsen, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 590,088, Oct. 27, 1966, abandoned, and a continuation of Ser. No. 855,712, Sept. 5, 1969, abandoned. This application Sept. 22, 1971, Ser. No. 182,886

Int. Cl. C22c *1/04*

U.S. Cl. 29—182 **7 Claims**



1. A shaping surface for shaping a molten high melting point material, the surface consisting essentially of about 1 to about 12 wt. percent Ni, about 0.5 to about 7.5 wt. percent Fe, the ratio of Ni to Fe being from about 1:1 to about 4:1, and about 85 to about 99 wt. percent W, the shaping surface having a short time elevated temperature strength at about 1,800° of at least about 20,000 psi and at about 1,500°F of at least about 40,000 psi, a thermal conductivity of at least about 0.15 cgs units, an elongation of at least about 3 percent, and having a surface roughness of not more than about 300×10^{-6} inches after 50,000 cycles of shaping molten high melting point materials.

3,859,056

CEMENTED CARBIDE INTERMEDIATE THEREFOR AND PROCESS FOR PRODUCING THE SAME

Akio Hara; Masaya Miyake, and Mitsunori Kobayashi, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 31, 1973, Ser. No. 328,168

Claims priority, application Japan, Feb. 17, 1972, 47-16838

Int. Cl. C22c *29/00*; **B22f** *1/00*

U.S. Cl. 29—182.7 **17 Claims**

1. A process for producing an intermediate product in the formation of a cemented carbide characterized by adhering an unsubstituted carboxylic acid having a molecular weight of less than 200 or an anhydride thereof to a starting powder of a Group IV-a, Group V-a or Group VI-a metal, a powder of an alloy containing such metals or a solid solution containing said metal, or a powder of a carbide of said metal.

3,859,057

HARDFACING MATERIAL AND DEPOSITS CONTAINING TUNGSTEN TITANIUM CARBIDE SOLID SOLUTION

William M. Stoll; Bligh H. Stockwell, both of Coquitlam, British Columbia, and Robert D. Eytchison, North Vancouver, British Columbia, all of Canada, assignors to Kennametal, Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 20,151, March 16, 1970, abandoned. This application July 20, 1972, Ser. No. 273,431

Int. Cl. C22c *29/00*

U.S. Cl. 29—182.7 **5 Claims**

1. A hardfacing deposit comprising; about 15 per cent tungsten titanium carbide solid solution having a specific gravity in the range from about 6.0 to 10.0; about 14.5 per cent Mn; about 2.5 per cent Ni; about 2.5 per cent Mo; about 0.5 per cent Si; about 0.75 per cent free carbon; Fe—Balance; in which the percentages are per cent by weight of the deposit.

3,859,058

CORROSION RESISTANT ALUMINUM COMPOSITE MATERIAL

William H. Anthony, Guilford, and Thomas S. Rasmussen, Bridgeport, both of Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Oct. 4, 1973, Ser. No. 403,450

Int. Cl. B32b *15/20*

U.S. Cl. 29—191 **15 Claims**

1. A corrosion resistant aluminum alloy composite comprising:

A. an aluminum alloy core consisting essentially of from **.5** to **3.0%** magnesium, **.3** to **1.0%** manganese, **.1** to **.3%** chromium, **.001** to **.003%** titanium, **.001** to **.3%** silicon, **.001** to **.2%** iron, **.001** to **.1%** copper, and **.001** to **.1%** zinc, balance aluminum; and

B. an aluminum alloy cladding, metallurgically bonded to at least one surface of the core, consisting essentially of from **.001** to **.1%** magnesium, **.2** to **1.5%** manganese, **.001** to **.1%** chromium, **.001** to **.03%** titanium, **.03** to **.3%** silicon, **.001** to **.05%** copper and **.001** to **.4%** zinc, balance aluminum.

3,859,059

EROSION-CORROSION RESISTANT ALUMINUM RADIATOR CLAD TUBING

William H. Anthony, and James M. Popplewell, both of Guilford, Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 222,795, Feb. 2, 1972, Pat. No. 3,809,155. This application Feb. 4, 1974, Ser. No. 439,336

Int. Cl. B32b *15/00*

U.S. Cl. 29—191 **4 Claims**

1. A composite metal article having improved resistance to erosion corrosion in aqueous environments comprising an aluminum base alloy cladding consisting essentially of 0.8 to

1.3% zinc, 0.7% maximum silicon plus iron, 0.10% maximum copper, 0.10% maximum manganese, 0.10% maximum magnesium, balance essentially aluminum, bonded to at least one side of an aluminum base alloy core consisting essentially of manganese from 1.0 to 1.5%, chromium from 0.1 to 0.4%, copper from 0.05 to 0.4%, balance essentially aluminum.

3,859,060

NICKEL-CHROMI UM-COBALT-MOLYBDENUM ALLOYS

Herbert Louis Eiselstein, and James Crombie Hosier, both of Huntington, W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,842

Int. Cl. B21c *37/00;* **C22c** *19/00*

U.S. Cl. 29—193 **4 Claims**

1. A welding material in wire or strip form for use in inert gas shielded metal arc welding consisting essentially of by weight, about 20% to about 24% chromium, about 0.8% to 1.5% aluminum, about 9.5% to about 20% cobalt, about 7% to about 12% molybdenum, not more than 0.15% carbon, up to about 0.6% titanium, up to about 0.006% boron, up to about 0.1% zirconium, up to about 0.05% magnesium and the balance essentially nickel.

3,859,061

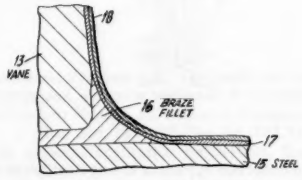
CORROSION RESISTANT COATING SYSTEM FOR FERROUS METAL ARTICLES HAVING BRAZED JOINTS

Kenneth K. Speirs; Martin Weinstein, and Michael F. Dean, all of San Antonio, Tex., assignors to Chromalloy American Corporation, New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,800

Int. Cl. B32b *15/18*

U.S. Cl. 29—195 **8 Claims**



1. A ferrous metal article having at least one brazed joint, the braze of said joint being formed of a non-ferrous brazing alloy of melting point ranging from about 1,125° to 1,925° F, said article being characterized by a diffusion-bonded layer of a metal aluminide selected from the group consisting of iron aluminide, nickel aluminide, cobalt aluminide and chromium aluminide over the entire surface thereof including the surface of the brazed joint,

the corresponding metal of said metal aluminide selected from the group consisting of iron, nickel, cobalt and chromium being diffusion-bonded as a first layer into the surfaces of both the braze and the ferrous metal and being enriched outward therefrom in the corresponding metal aluminide by virtue of aluminum diffused into said diffused first metal layer,

the thermally diffused aluminum coating also having bonded thereto a cured non-metallic barrier layer formed from a silicate selected from the group consisting of sodium silicate, potassium silicate, lithium silicate and ethyl silicate,

whereby the aluminized brazed joint is characterized by an improved combination of resistance to corrosion and fatigue.

3,859,062

AUTOMATIC PACKING APPARATUS

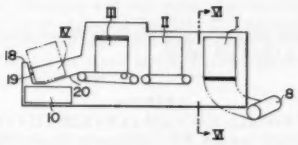
Kei Okubo, Neyagawa; Toshio Saito, Kobe, and Kazunori Ueda, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd. and The Dai'El Inc., both of Osaka, Japan

Filed Feb. 6, 1973, Ser. No. 330,022

Claims priority, application Japan, Feb. 7, 1972, 47-13724; July 27, 1972, 47-75777; July 27, 1972, 47-75778; July 27, 1972, 47-75779; July 27, 1972, 47-75780; July 28, 1972, 47-76174; Aug. 18, 1972, 47-83028; Aug. 18, 1972, 47-83029; Aug. 18, 1972, 47-83030; Aug. 21, 1972, 47-83901; Aug. 22, 1972, 47-84295; Aug. 22, 1972, 47-84296; Aug. 23, 1972, 47-84840

Int. Cl. B65b *9/10, 5/2, 43/26*

U.S. Cl. 53—183 **9 Claims**



1. A packing apparatus comprising means for producing sacks from a liquid impermeable packing material such as plastic film, means for introducing goods into each of said sacks to load the sacks, means for sealing the loaded sacks adjacent the top thereof to pack the goods, means for delivering the packed goods, and conveyor means supporting the sacks at a predetermined pitch and operative in response to a packing initiation signal to convey the sacks to processing positions, in which said sack producing means comprises means for supplying lengths of a tubular film material, means for lifting the tubular film material to a predetermind level at which the film material is supported at the top portion thereof by said conveyor means, and means for sealing and severing the thus supported film material along predetermined lines transverse to an axis of the film material to form a sack, and wherein said film material is in the form of a tube having opposite sides folded inwardly with the outer edges of each of the folded sides being disposed in close contacting relationship with each other, and in which said lifting means includes a chuck mechanism equipped with means operative to pinch the tube at the outer edges of the inwardly folded sides thereof in such a manner that said outer edges are separated from each other.

3,859,063

ENTRAINMENT SEPARATOR

Harold F. Porter, Hockessin, and Steven I. Taub, Claymont, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

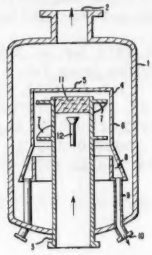
Continuation of Ser. No. 387,032, Aug. 9, 1973, abandoned. This application Apr. 25, 1974, Ser. No. 463,989

Int. Cl. B01d *45/12*

U.S. Cl. 55—233 **2 Claims**

1. An entrainment separator comprising in combination a vessel fitted at the bottom with an upwardly directed riser pipe for discharging entraining gas within said vessel, impingement cap means comprising an impervious cap top disposed above the discharge end of said riser and a cylindrical cap skirt surrounding the upper portion of said riser, thereby creating an annulus between the riser and the cap skirt, said cap means acting to redirect the gas flowing through said riser pipe in a direction sharply away from the direction the gas had taken while passing through said riser pipe, extending intermediate the riser pipe and cylindrical cap skirt, a fixed spiral vane for imparting a swirling motio.. to the gas flowing through said annulus, thereby removing the entrained liquid from the gas by centrifugal force, weir collector means located at the bot-

tom of said cap skirt and below said spiral vane for collecting the de-entrained liquid, drain means for removing the liquid



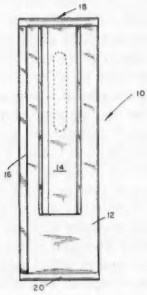
from the weir and discharging the de-entrained liquid from the vessel and a clean gas outlet.

3,859,064

DOUBLE-WALL VACUUM CLEANER FILTER BAG

Martin Cordell, Inwood, N.Y., assignor to Studley Paper Company, Inc., Inwood, N.Y.

Filed Aug. 16, 1973, Ser. No. 388,896
Int. Cl. B01d *46/02*
U.S. Cl. 55—368 **5 Claims**



1. A vacuum cleaner filter bag comprising a receptacle portion of air pervious material and a connecting tube portion of air impervious material;

said receptacle portion including two sheets of said air pervious material joined together to define a double-wall front panel, a double-wall rear panel, double-wall side panels and top and bottom ends;

said double-wall front panel being provided with an opening extending through both of said two receptacle sheets;

first sealing means closing said bottom end of said receptacle portion;

said tube portion including a front wall, a rear wall, side walls, and top and bottom ends;

said rear wall being provided with an aperture therethrough;

joining means securing said tube rear wall against said receptacle front panel with said tube aperture in facing communication with said receptacle opening;

said bottom end of said tube portion being open for connection to a vacuum cleaner discharge fitting;

second sealing means joining said top ends of said receptacle and tube portions together and also closing both of said top ends;

said second sealing means being a double-folded seam provided with an adhesive for retaining said tube top end within said receptacle top end in a folded condition to close both of said top ends;

said two receptacle sheets together being able to effectively withstand a force of a direct stream of air passing through said tube portion into said receptacle portion while retaining dust and dirt particles without rupturing, each one of said two receptacle sheets taken alone being more porous than said two receptacle sheets together and being unable to effectively withstand said force;

one of said receptacle sheets, defining an inner lining of said receptacle portion, being thinner than the other one of said receptacle sheets which defines an outer layer of said receptacle portion; and

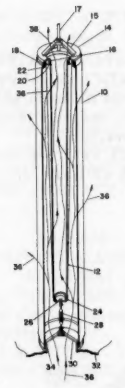
said inner lining taken alone being unable to withstand said force without rupturing.

3,859,065

DUST COLLECTOR ELEMENT

Vincent E. Schoeck, Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Jan. 3, 1972, Ser. No. 215,031
Int. Cl. B01d *46/06*
U.S. Cl. 55—378 **6 Claims**



1. In a dust collection apparatus having a cell plate separating a clean air compartment from a contaminated air compartment, said plate having at least one opening therein, a tube type dust filter comprising:

a. a cylindrical outer tube of textile material and a cylindrical inner tube of textile material, said inner tube disposed in annular relationship inside the outer tube;

b. a double walled ring, said ring having an outer peripheral wall and an inner peripheral wall, the outer peripheral wall having an outwardly extending flange and the inner peripheral wall having an inwardly extending flange, means holding one end of said outer tube around the outwardly extending flange and means holding one end of said inner tube around the inwardly extending flange;

c. a first member for supporting said ring and the attached filter tubes, and a first extension support engaging said first member;

d. a closed cap having an outwardly extending flange, said cap being fitted to and closing the other end of said inner tube;

e. a sleeve for being secured to said plate for surrounding said opening, the other end of said outer tube being fitted to said sleeve;

f. a second member attached to said sleeve and tensioning means connecting said closed and means for adjusting said tensioning means cap to said second member.

3,859,066
DUST FILTER

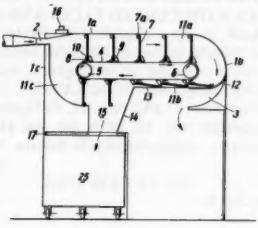
Hermann Trutzschler, Rheydt-Odenkirchen, Germany, assignor to Trutzschler & Co., Rheydt-Odenkirchen, Germany

Filed Sept. 20, 1973, Ser. No. 398,997

Claims priority, application Germany, Sept. 20, 1972, 2246171

Int. Cl. B01d *46/22*

U.S. Cl. 55—401 **13 Claims**



1. A dust filter comprising, in combination:

a. a housing forming a channel having an inlet for dustladen air and outlet for the cleaned air and a constant cross section between said inlet and said outlet

b. an air-impermeable endless belt;

c. means for moving said belt through the channel of the housing, the movement being transverse to a cross section of the channel;

d. a plurality of filter plates arranged at equal distances from each other on the belt, each filter plate having only a form that a projection of the plate on a plane of the cross section of the channel is in conformity with the cross section so that the plates seal the channel against the housing and against the belt, the length of said channel between said inlet and said outlet being longer than a multiple of one of said distances.

3,859,067
FILTER

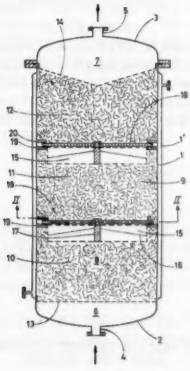
Jaroslav Dasek, Yverdon, and Yvan Padly, Tour-de-Peilz, both of Switzerland, assignors to Societe D'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Filed Dec. 18, 1973, Ser. No. 425,723

Claims priority, application Switzerland, Dec. 28, 1972, 18993/72

Int. Cl. B01d *27/02*

U.S. Cl. 55—485 **2 Claims**



1. In a filter for gaseous fluids, comprising an elongated cylindrical housing having an inlet at one end and an outlet at the other end, and at least two separate masses of a filter material disposed in spaced apart series arrangement within the housing and through which the gaseous fluid must flow in passage through said housing between the inlet and outlet thereof, the improvement of a cylindrically shaped walled member disposed in the space between successive ones of said filter material masses, said member including two parallel spaced apart circular walls extending traversely of the axis of said housing and being of lesser diameter than said housing, and an encircling cylindrical wall part extending between the edges of said two transversely disposed walls, said member being connected to a support secured to said housing, said support including crosspieces extending transversely of said housing and having ends received in annular abutment structure at the interior surface of said housing and extending radially inwardly in said housing to a location adjacent the cylindrical wall part of said member, the two spaced apart walls and cylindrical wall part being of permeable character whereby all flow of gaseous fluid from one mass of filter material to a successive mass must pass through said member to effect redistribution of said flow in passing from said one mass to said successive mass.

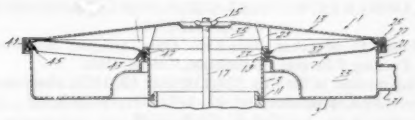
3,859,068
PLEATED AIR FILTER

James C. McLaren, and Bruce E. Reber, both of Racine, Wis., assignors to Tenneco Inc., Racine, Wis.

Filed May 9, 1972, Ser. No. 251,693

Int. Cl. B01d *27/06*

U.S. Cl. 55—498 **7 Claims**



1. A fluid filter element adapted for a flat silhouette type fluid filter construction comprising a sheet of filter material having a series of substantially V-shaped pleats formed therein, each pleat having a pair of sides and adjacent pleats being oppositely directed and having a common side, and at least one end portion of each of said pleat sides having score lines therein and being transversely bent along said score lines to provide a tuck of predetermined shape and position in each said end portion, each said tuck tapering in height as it approaches the outer edge of the pleat side to provide an outer pleat edge that is substantially shorter than the main portion of the pleat, said score lines including a V-shaped portion located in each pleat side to provide for said tuck taper along opposite longitudinal portions of each pleat side, said score lines including a stem extending from the apex of said V-shaped portion to provide a Y-shaped portion and the Y-stem aligned portions of the pleat sides being crushed to form a rim for the filter material.

3,859,069
VACUUM FREEZING VAPOR COMPRESSION APPARATUS

Joseph Seliber, Wilmette, Ill., assignor to Pacific Lighting Service Co., Los Angeles, Calif.

Division of Ser. No. 154,129, June 17, 1971,. This application July 19, 1973, Ser. No. 380,715

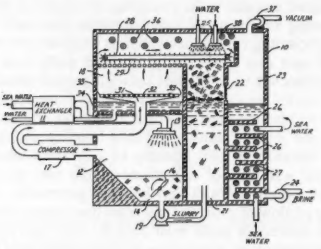
Int. Cl. B01d *9/04*

U.S. Cl. 62—58 **2 Claims**

1. A method for desalting saline water comprising the steps of:

flash evaporating a portion of saline water and freezing another portion of the saline water to form ice crystals;

separating the water vapor, ice crystals, and brine;
compressing the water vapor; and
fluidizing a bed of the ice crystals with the compressed water vapor comprising the steps of:
introducing separated ice crystals near the top of a bed; and



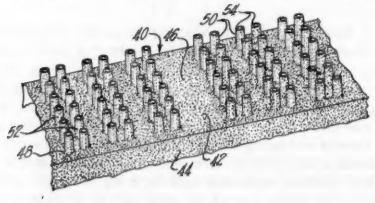
introducing compressed water vapor through a deck near the bottom of the bed with sufficiently uniform gas distribution, at a sufficient velocity to buoy up the ice crystals, and a sufficient agitation therein that the mixture of water vapor and crystals behaves largely like a liquid in the bed.

3,859,070

LAMINAR REFRACTORY STRUCTURES FOR FORMING GLASS FIBERS

Robert O. Slonaker, Pataskala, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 270,131, July 10, 1972, abandoned. This application Oct. 23, 1973, Ser. No. 408,362
Int. Cl. C03b *37/02*
U.S. Cl. 65—1 **19 Claims**



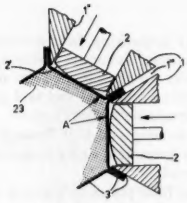
1. A glass fiber forming apparatus adapted to hold and emit molten glass for attenuation into glass fibers, said apparatus being fabricated from a platinum group metal alloy and said apparatus comprising:
a. Sidewalls and a bottom wall,
b. a plurality of rows of tubular projections extending downwardly from the bottom wall, and
c. a high density coating of a material not of the platinum group removably bonded to the sidewalls, to the bottom wall and to the tubular projections of the apparatus to form a composite,
said coating having a sufficient density and thickness to preclude the migration of volatile oxides of the platinum group metal from the apparatus during service of the apparatus at temperatures of molten glass, said coating retaining the oxides of the platinum group therein so that the platinum group metal can be reclaimed subsequent to the service of the apparatus, said coating resisting deterioration at temperatures of molten glass, and said coating having a coefficient of thermal expansion substantially lower than the coefficient of thermal expansion of the alloy in order to impart compressive forces to the sidewalls and the bottom wall to help support and maintain the apparatus in a dimensionally stable condition during operation at temperatures of molten glass, and to help maintain the alignment of the tubular projections during operation of the apparatus at temperatures of molten glass so that uniformity of glass fiber diameter is maintained.

3,859,071

APPARATUS FOR COMPRESSING A POLYGONAL PACK OF OPTICAL FIBERS EMPLOYING A PLURALITY OF SLIDES WITH CURVED FACES AND A CAGE

Robert Malcolm Beasley, Turners Hill; David John Harman, Hailsham; Douglas Raymond Mainard, Salfords, and Derek Washington, Earlswood, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 197,842, Nov. 11, 1971, abandoned. This application Nov. 19, 1973, Ser. No. 416,991
Claims priority, application Great Britain, Nov. 26, 1970, 56234/70
Int. Cl. C03b *37/00*
U.S. Cl. 65—11 R **5 Claims**



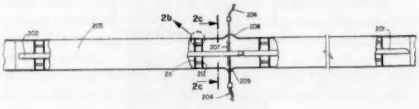
1. Apparatus for manufacturing plates composed of parallel fibers comprising a number of compression slides equal to the number of sides of a polygonal pack of fibers, said slides being arranged with radial symmetry around a polygonal compression space provided for receiving said pack, driving means for applying to said slides simultaneous inward relative motion in radial directions so as to compress said pack, means for heating the pack during said compression so as to fuse the fibers together, and a cage surrounding the pack and cooperating with the operative faces of the slides whereby the slides apply pressure initially to the central area of each side of the pack and extend the applied pressure progressively towards the ends of the sides of the pack thereby forming curved concave sides of a length approximately equal to one side of the uncompressed pack.

3,859,072

METHOD OF FABRICATING CATAPHORETIC LASERS

James R. Fendley, Haddon Heights, and Carl Harry Knowles, Moorestown, both of N.J., assignors to Metrologic Instruments, Inc., Bellmawr, N.J.

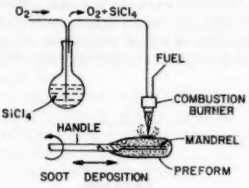
Filed Aug. 23, 1973, Ser. No. 390,889
Int. Cl. C03b *23/20*
U.S. Cl. 65—42 **9 Claims**



1. A method of fabricating laser apparatus comprising the steps of:
a. assembling a structure having a central bore tube located on the axis of an outer envelope tube by means of a plurality of baffle assemblies;

b. shrinking said envelope tube over said baffle assemblies by application a pressure differential and of heat;
c. mounting said structure on a taut wire which is relatively impervious to heat;
d. successively heating said structure in the regions of said baffle assemblies from one end of said structure to the other end thereof; and
e. installing mirrors at opposite ends of said structure.

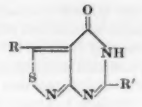
3,859,073
METHOD OF PRODUCING GLASS BY FLAME HYDROLYSIS
Peter C. Schultz, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Oct. 19, 1973, Ser. No. 407,918
Int. Cl. C03c 25/02
U.S. Cl. 65—60 14 Claims



1. A method of incorporating an oxide additive into a glass body produced by flame hydrolysis which comprises passing one or more hydrolyzable compounds of SiO_2, GeO_2, B_2O_3, P_2O_5, SeO_2, and TeO_2 in vapor form into a flame to produce the corresponding oxides in particulate form by hydrolysis of said compounds, depositing the oxide particles on a support as an integral preform having a network of continuous open pores throughout its mass and being sufficiently cohesive to resist disintegration during liquid immersion, said porosity being between about 60–90 percent and said pores having a diameter ranging between about 0.001–10 microns, filling at least a portion of the pores in the preform with a dopant material in liquid form that contains the desired oxide additive, or a compound convertible thereto, said liquid form being a solution, a colloidal solution, a suspension, or a compound in the molten state and that is substantially chemically inert with respect to the preform, depositing said material as a solid in said pores, and heat treating the preform to consolidate it into a non-porous glassy body composed of the oxide of hydrolysis containing the additive oxide dispersed throughout at least a portion of the body.

3,859,074
ISOTHIAZOLOPYRIMIDINE HERBICIDES AND METHOD OF CONTROLLING PLANT GROWTH
Loren Kenneth Gibbons, Medina, and Arthur Albert Ramsey, Middleport, both of N.Y., assignors to FMC Corporation, New York, N.Y.
Division of Ser. No. 189,780, Oct. 15, 1971, Pat. No. 3,816,420. This application Aug. 30, 1973, Ser. No. 393,073
Int. Cl. A01n 9/12
U.S. Cl. 71—90 16 Claims

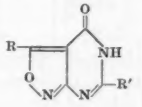
1. An herbicidal composition containing, as active ingredient, an effective amount of a compound of the formula:



wherein R and R′ are members of the group consisting of straight and branched alkyl radicals of 1 to 4 carbon atoms, in admixture with an agricultural carrier.

3,859,075
ISOXAZOLPYRIMIDINE HERBICIDES AND METHOD OF CONTROLLING PLANT GROWTH
Loren Kenneth Gibbons, Medina, N.Y., assignor to FMC Corporation, New York, N.Y.
Division of Ser. No. 189,779, Oct. 15, 1971, Pat. No. 3,803,148. This application Aug. 30, 1973, Ser. No. 392,949
Int. Cl. A01n 9/22
U.S. Cl. 71—92 22 Claims

1. An herbicidal composition containing, as active ingredient, an effective amount of a compound of the formula:



wherein R and R′ are members of the group consisting of straight and branched alkyl radicals of 1 to 4 carbon atoms, in admixture with an agricultural carrier.

3,859,076
STABILIZED HERBICIDAL COMPOSITIONS
Jurg Eichenberger, Munchenstein/Bl; Norbert Perlhefter, Allschwil/Bl, and Pierre-Andre Bole, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed July 27, 1971, Ser. No. 166,605
Claims priority, application Switzerland, July 31, 1970, 11591/70
Int. Cl. A01n 9/22
U.S. Cl. 71—93 7 Claims

1. a stable, storable herbicidal composition comprising (1) a herbicidally effective amount of an intermolecular compound of (A) a 2-alkylthio-4-alkylamino-6-butylamino-s-triazine and (B) at least one 2-chloro-4,6-bis-amino-s-triazine in which the two amino moieties are different, and (2) a carrier

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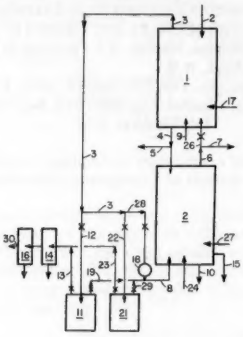
3,859,077
MANUFACTURE OF TITANIUM CHLORIDE, SYNTHETIC RUTILE AND METALLIC IRON FROM TITANIFEROUS MATERIALS CONTAINING IRON
Donald F. Othmer, 333 Jay St., Brooklyn, N.Y. 11201
Continuation-in-part of Ser. No. 235,531, March 17, 1972, abandoned. This application Apr. 20, 1973, Ser. No. 352,947
Int. Cl. C21b 1/00; C22b 53/00
U.S. Cl. 75—1 28 Claims

1. A process conducted at approximately atmospheric pressure for making metallic iron in a dense phase from an original material in the form of particulate solids containing titanium oxide and iron oxide said process comprising the steps of:
a. passing said original material into a first reaction zone wherein, at a temperature between about 950°C and 1100°C in the presence of a carbonaceous reductant, a titanium halide in an added gaseous stream halogenates in a first chemical reaction a substantial part of the iron in said iron oxide in said original material to produce an iron halide in said gas stream and additional titanium oxide;

b. separating said gas stream containing said iron halide from the solid residue of said first chemical reaction, said solid residue containing both said titanium oxide in said original material and said additional titanium oxide produced in said first chemical reaction and having a greater ratio of atoms of titanium to atoms of iron than this ratio in said original material;

c. passing said separated gas stream containing said iron halide into a second reaction zone maintained at a temperature between 1100°C and about 1800°C;

d. passing at least a part of said solid residue containing said titanium dioxide into said second reaction zone;



e. reacting in said second reaction zone in the presence of said carbonaceous reductant and by a second chemical reaction said iron halide in said gas stream and said titanium oxide in said residue, both said gas stream and said residue having come from said first reaction zone;

f. producing in said second reaction zone by said second chemical reaction a dense phase of metallic iron, and said titanium halide in a gas stream containing a higher ratio of atoms of titanium to atoms of iron than in said original material; and

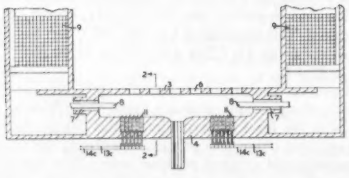
g. separating said gas stream containing said titanium halide and passing at least a part of said titanium halide back to said first reaction zone to allow it to enter into said first chemical reaction.

3,859,078

METHOD OF OPERATING A BASIC OPEN HEARTH FURNACE

Derek W. R. Haysom, and William Wells, both of Sydney, Nova Scotia, Canada, assignors to Sydney Steel Corporation, Sydney, Nova Scotia, Canada

Filed Oct. 30, 1972, Ser. No. 301,809
Int. Cl. C21c *5/34*, *5/42*
U.S. Cl. 75—59 **18 Claims**



1. In the operation of a basic open hearth furnace in the production of steel the improvement which comprises introducing a stream of oxygen horizontally into the molten metal in the chamber of said furnace at a point substantially beneath the surface thereof through at least one tuyere extending through the furnace lining causing boiling of the molten metal in said furnace chamber and effecting oxidation of the carbon and metalloid impurities therein to form said steel and simultaneously introducing the stream of hydrocarbon fuel into said molten metal through said tuyeres to surround said oxygen stream and protect the tuyere and the furnace lining adjacent said tuyere from erosion.

3,859,079

HIGH TEMPERATURE OXIDATION RESISTANT ALLOY

Philip M. Giles, and Arnold R. Marder, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 9, 1972, Ser. No. 275,650
Int. Cl. C22c *37/10*
U.S. Cl. 75—124 **3 Claims**

1. A ferrous alloy resistant to catastrophic oxidation under conditions of repeated cyclic heating and cooling between the temperatures of 2,200° F. and 200° F., said ferrous alloy composed of, by weight percent, a maximum of 0.04% carbon, aluminum between about 4.0 and 8.2%, chromium up to about 10.5%, titanium between 0.4 and 1.10%; and the balance substantially iron, except that said ferrous alloy is characterized by a value of f of at least about 9.0, where:

$f = (\%Al) + 0.4(\%Cr) + 2.5(\%Ti)$, and $(\%Ti) > 4(\%C)$.

3,859,080

CORROSION RESISTANT ALLOYS

Ralph A. Mendelson, Westminster; Karl P. Staudhammer, Gardena, and Roberto Valencia, Jr., Long Beach, all of Calif., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. Nos. 103,818, Jan. 4, 1971, abandoned, and Ser. No. 113,074, Feb. 5, 1971, abandoned, and Ser. No. 119,933, March 1, 1971, abandoned, and Ser. No. 137,078, April 23, 1971, abandoned, and Ser. No. 137,006, April 23, 1971, abandoned. This application Dec. 6, 1971, Ser. No. 205,358
Int. Cl. C22c *39/14*
U.S. Cl. 75—126 C **4 Claims**

1. A ferritic phase alloy of body-centered cubic lattice structure consisting of

Cobalt 6.9%; Chromium 20.5%; Silicon 1.7%; Molybdenum 0.3%; the balance iron; all parts by weight percent.

3,859,081

HIGH SPEED STEEL COMPOSITIONS AND ARTICLES

Richard F. Harvey, Orchard Lake, and George E. Moore, Farmington, both of Mich., assignors to Moore Production Specialities, Inc.

Filed Dec. 17, 1973, Ser. No. 425,569
Int. Cl. C22c *39/14*
U.S. Cl. 75—126 C **6 Claims**

1. An improved high speed steel composition consisting essentially of about 1.20 to 1.40% carbon; 0.50% maximum Manganese; 1.00% maximum Silicon; 3.5 to 4.5% Chromium; 2.25 to 2.75% Vanadium; 5.60 to 6.40% Tungsten; 5.60 to 6.40% Molybdenum; 5.0 to 7.0% Cobalt; and 0.02 to 0.08% Nitrogen with the remainder essentially Iron; said high speed steel composition having a ratio of Cobalt to equivalent Tungsten, of about 0.12 to 0.26% and a Vanadium to Carbon ratio of about 1.7 to 2.1%.

3,859,082

WROUGHT AUSTENITIC ALLOY PRODUCTS

Elbert E. Denhard, Jr., Towson, and Robert R. Gaugh, Lutherville, both of Md., assignors to Armco Steel Corporation, Middletown, Ohio

Continuation-in-part of Ser. No. 843,738, July 22, 1969, abandoned. This application Feb. 29, 1972, Ser. No. 230,524

Int. Cl. C22c *31/20*

U.S. Cl. 75—128 9 Claims

1. Wrought austenitic chromium-nickel-iron alloy tubular product characterized by a combination of workability, resistance to stress-corrosion cracking and to intergranular attack under stress at elevated temperatures and essentially consisting of about 24% chromium, about 34% nickel, about 5% manganese, about .1% carbon, about 2% molybdenum, about .5% columbium, and remainder substantially all iron.

3,859,083

CAST ALLOY FOR VALVE SEAT-INSERT

Kunio Kusaka, Yokohama; Makoto Osawa, Tokyo; Yoshitoshi Hagiwara, Niiza; Tomio Sekine, Kawasaki, and Yoshiaki Takagi, Kawagoe, all of Japan, assignors to Honda R & D Co., Ltd., Wako-City and Tokushu Seiko Co., Ltd., Kawasaki-City, both of, Japan

Filed Nov. 2, 1972, Ser. No. 303,026

Claims priority, application Japan, May 17, 1972, 47-48124

Int. Cl. C22c *39/20*, *39/26*, *39/36*, *39/44*, *39/50*, *39/54*

U.S. Cl. 75—128 A 1 Claim

1. An alloy for use in a valve seat consisting, in weight ratio, essentially of 0.80 to 2.50 % of C, 0.20 to 3.0 % of Si, 0.10 to 5.0 % of Mn, 0.03 to 0.50 % of P, 0.02 to 0.30 % of S, 13.0 to 28.0 % of Ni, 10.0 to 30.0 % of Cr, 0.1 to 5.0 % of Mo, 0.02 to 0.20 % of N and the balance iron.

3,859,084

CADMIUM-ANTIMONY-LEAD ALLOY

George W. Mao, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Continuation-in-part of Ser. No. 185,434, Sept. 30, 1971, abandoned, which is a continuation of Ser. No. 842,457, July 17, 1969, abandoned. This application Aug. 3, 1973, Ser. No. 385,481

Int. Cl. C22c *11/00*

U.S. Cl. 75—166 B 6 Claims

1. For use as cable sheathing or as grids for storage battery plates or the like, a lead alloy consisting of antimony ranging from 2.0% to 2.5% by weight, cadmium ranging from 2.0% to 4.0% by weight with the cadmium content of said lead alloy being greater than the antimony content of said lead alloy with the remainder lead.

3,859,085

METHOD FOR PRODUCING IRON-BASE SINTERED ALLOYS WITH HIGH DENSITY

Takashi Kimura; Azusa Majima, and Hiroshi Hamamoto, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Continuation-in-part of Ser. No. 142,556, May 12, 1971, abandoned. This application July 6, 1972, Ser. No. 269,328

Claims priority, application Japan, July 12, 1971, 46-51569

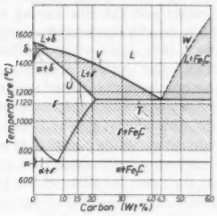
Int. Cl. B22f *1/00*

U.S. Cl. 75—204 5 Claims

1. A method for producing a high density, high hardness sintered iron-base alloy which comprises:

heating a mixture of particulate material selected from the group consisting of mixed particles of iron, carbon and metallic-carbide particles, and mixed particles of an iron-carbon alloy particles and metallic particles, said metallic carbide being selected from the group consisting of tungsten carbide, molybdenum carbide, manganese carbide, chromium carbide, titanium carbide, vanadium carbide, niobium carbide, tantalum carbide, boron carbide, and mixtures thereof, at a temperature within the range of the solid-liquid phase of the resulting alloy,

said sintering temperature being lower than the melting points of any of said starting particles,



maintaining the sintering temperature for a period sufficient to cause sintering, and

cooling said sintered iron base alloy.

3,859,086

METHOD OF ENHANCING POWDER COMPACTIBILITY

Nathan Lewis Church, Warwick, N.Y., and Edwin Snape, Marton, England, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,444

Int. Cl. B22f *1/00*, *3/12*

U.S. Cl. 75—211 11 Claims

1. A process for improving the compactibility of metal powders of substantially spherical configuration and of relatively poor initial compactibility, comprising:

i. subjecting said powders to the action of a corrodent which selectively chemically attacks the less chemically resistant regions of the powder surfaces so as to thereby roughen surfaces on a fine scale;

ii. compacting said roughened particles by subjecting the particles to a compressive force sufficient to cause the particles to form a self-sustaining body; and thereafter

iii. sintering said body at a temperature of up to about 2,100°F. or higher.

3,859,087

MANUFACTURE OF ELECTRICAL CONTACT MATERIALS

Melvin L. Backstrom, Murrysville, Pa., assignor to GTE Sylvania Incorporated, Waltham, Mass.

Filed Feb. 1, 1973, Ser. No. 328,718

Int. Cl. B22f *3/00*; C22c *1/04*

U.S. Cl. 75—213 6 Claims

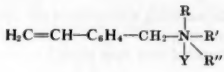
1. A process for obtaining an electrical contact having high electrical conductivity, high hardness and strength capable of providing excellent arc erosion and low heat rise capability which comprises blending at least one refractory metal powder with at least one powder of a metal from groups IB, IIB and VIII of the Periodic Table, sintering the blend to at least 95% of its maximum theoretical density, finely dividing the sintered material such that the particle size is in the range of about 4–10 microns and there are no agglomerates larger than a Tyler mesh size of 200, compacting the finely divided material, and sintering the resulting compact.

3,859,088
COLORED PREPRINTING OF ELECTROSTATIC COPY PAPER

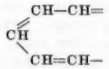
John R. Romig, Euclid, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation of Ser. No. 175,689, Aug. 27, 1971, abandoned. This application June 29, 1973, Ser. No. 375,258
Int. Cl. G03g *5/04*
U.S. Cl. 96—1.2 **7 Claims**

1. A process for preparing copies of an original from electrostatic copy paper and the like having a photoconductive coating adapted to be electrostatically imaged and developed by toner having a first color without affecting a preprinted image in a second color thereon, comprising forming on said photoconductive coating a preprinted image, said image being formed of a composition which is transparent to the transmission of energy capable of charging and discharging said underlying photoconductive coating comprising a colorant having a second color, and an electroconductive polymer consisting essentially of at least one member of the group consisting of (a) homopolymers of a vinylbenzyl quaternary ammonium compound having the general formula:



wherein R, R′, and R″ each represents individually a monovalent radical selected from the group consisting of $CH_2OH - CH_2 -$, $CH_3 - CHOH - CH_2 -$, $CH_2OH - CHOH - CH_2 -$ and alkyl, aryl, cycloalkyl and aralkyl hydrocarbon radicals, and R, R′ and R″ collectively represent the trivalent radical of the formula:



wherein the three valences are attached to the nitrogen atom and Y is an anion, said R groups containing a total of not more than 12 carbon atoms in the substituent radicals, (b) copolymers of at least two of such vinylbenzyl quaternary ammonium compounds, (c) copolymers of at least 65% by weight of at least one of such vinylbenzyl quaternary ammonium compounds and not more than 35% by weight of acrylamide, and (d) copolymers corresponding to from 95.0% to 99.99% by weight of at least one of such vinylbenzyl quaternary ammonium compounds and from 5.0% to 0.01% by weight of divinylbenzene, a sufficient amount of said elecroconductive polymer being present to render said preprinted image electroconducting,

electrostatically charging said photoconductive coating,

imaging the charged photoconductive coating, by exposing to actinic radiation in a pattern corresponding to said original to discharge selected radiated areas including at least some areas thereof underlying said preprinted image,

and applying and fixing toner of said first color over non-discharged areas of said photoconductive coating.

3,859,089
MULTIPLE COPY ELECTROPHOTOGRAPHIC REPRODUCTION PROCESS

William L. Chambers, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 730,225, May 20, 1968, abandoned. This application Oct. 20, 1969, Ser. No. 867,738
Int. Cl. G03g *13/22*
U.S. Cl. 96—1.4 **2 Claims**

1. A process for electrophotographically producing more than three copies per exposure to a light pattern of actinic radiation comprising:

a. providing a photoconductive sheet comprising a base having a coating thereon comprising:

i. photoconductive titanium dioxide having a characteristic relaxation time of less than about 9 minutes and being present to the extent of about 40% to about 60% by volume of said coating;

ii. an insulating binder providing a matrix for said photoconductive titanium dioxide having an acid number below 70; and

iii. from about 0.1×10^{-6} to about 15×10^{-6} equivalents per square meter of total photoconductive titanium dioxide surface of at least one organic acid or organic acid salt decay retarder having at least **6** carbon atoms per molecule;

b. exposing said photoconductive sheet to a light pattern to produce a latent image on said photoconductive sheet corresponding to said light pattern;

c. electrographically developing said latent image;

d. transferring the developed image to a receptor sheet; and

e. sequentially repeating steps (c) and (d) at least 3 times in the absence of further exposure according to step (b) whereby at least four receptor sheets are provided each defining a developed image of substantially similar contrast corresponding to said light pattern are produced.

3,859,090
REPELLENT COMPOSITIONS AND ELEMENTS CONTAINING THE SAME

William E. Yoerger, Rochester; John M. McCabe, Pittsford, and John F. Wright, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 17, 1973, Ser. No. 361,370
Int. Cl. G03f *7/10*; **G03g** *5/02*; **B41n** *1/00*
U.S. Cl. 96—1.5 **10 Claims**

7. The element of claim **6**, wherein said support comprises a conductive base bearing a photoconductive layer.

3,859,091
PREPARATION OF PRINTING OR PATTERN PLATES

Forrest A. Wessells, Baltimore, and John E. Pickard, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 351,415, April 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 316,253, Dec. 18, 1972, abandoned, which is a continuation-n-part of Ser. No. 178,723, Sept. 8, 1971, abandoned. This application Apr. 19, 1973, Ser. No. 352,510
Int. Cl. C03c *5/00*; **G03f** *7/00*, *5/00*
U.S. Cl. 96—36.3 **4 Claims**

1. Method for making a polymeric relief printing plate with reduced cupping or dishing in large relief areas and increased highlight dot stability and with reduced overall cure time comprising the steps of:

a. disposing a substantially uniform layer of liquid photocurable polyene-polythiol polymer composition onto a support sheet;

b. curing the said layer by:

i. first directly exposing the layer of photocurable composition to actinic radiation for a time period of from about 0.5 to about 4.0 seconds, but not longer than

about 10 percent less than the time period in which the photocurable polymer begins to gel when directly exposed under the prevailing exposure conditions;

ii. further exposing the layer of photocurable polymer composition to actinic radiation projected through an image-bearing transparency until the layer is substantially completely cured in the image exposed areas; and then

c. developing the relief printing plate by removing from the support sheet the portions of incompletely cured photocurable polymer composition which were unexposed during said image exposure step (b) (ii).

3,859,092
PHOTOGRAPHIC SYSTEMS BASED ON PHOTOSENSITIVE COPPER (I) COMPLEXES

Henry J. Gysling, and Richard S. Vinal, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 30, 1973, Ser. No. 365,374
Int. Cl. G03c *5/00, 5/24*
U.S. Cl. 204—15 **24 Claims**

1. In a process of developing an image in a light sensitive element comprising a support and a light sensitive copper material by contacting the copper material with a chemical developer comprising a reducing agent or physical developer comprising a metal salt and reducing agent therefor, the improvement comprising employing as said light sensitive copper material a light sensitive copper (I) complex represented by the formula:

1. $[CuL_nX]$ wherein L is a ligand selected from the group consisting of monodentate or polydentate neutral Lewis bases containing a Group V A or Group VI A donor atom;

n is an integer of from 1 to 3; and

X is a monovalent coordinating reducing anion; or

2. $[CuL_m]X'$ wherein L is a ligand selected from the group consisting of monodentate and polydentate neutral Lewis bases containing a Group V A or Group VI A donor atom,

m is an integer selected from the group consisting of 2 and 4; and

X′ is a monovalent noncoordinating reducing anion.

24. The process of forming a printed circuit comprising

A. coating an electrically insulating substrate with a photosensitive copper (I) complex having a formula selected from the group consisting of

1. $[CuL_nX]$ wherein L is a ligand selected from the group consisting of monodentate and polydentate neutral Lewis bases containing a Group V A or Group VI A donor atom;

n is an integer of from 1 to 3; and

X is a monovalent coordinating reducing anion, or

2. $[CuL_m]X'$ wherein L is a ligand selected from the group consisting of monodentate and polydentate neutral Lewis bases containing a Group V A or Group VI A donor atom;

m is an integer selected from the group consisting of 2 and 4; and

X′ is a monovalent noncoordinating reducing anion,

B. imagewise exposing the coated substrate to actinic light; and

C. physically developing metal on the exposed areas from a physical development bath comprising a metal salt and a reducing agent therefor and building up the deposited metal by further depositing metal thereon by electroplating.

3,859,093
FOGGED, DIRECT-POSITIVE EMULSION CONTAINING COMPOSITE SILVER HALIDE GRAINS PROTECTED WITH SILVER HALIDE LAYER AND THE USE THEREOF IN REVERSAL PROCESS

Manfred Becker, Leverkusen; Otto Lapp, and Erik Moisar, both of Cologne, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 26, 1973, Ser. No. 344,535
Claims priority, application Germany, Apr. 1, 1972, 2216075
Int. Cl. G03c *5/24, 1/34, 1/28*
U.S. Cl. 96—64 **10 Claims**

1. A light-sensitive photographic material comprising a supported direct positive silver halide emulsion layer containing silver halide grains of composite structure, the said grains comprising a core of silver halide which is chemically sensitized, the said core is coated by a silver halide shell which at the surface contains spontaneously developable fog and an outer protective layer of silver halide which envelops the shell and covering the developable nuclei protects the nuclei from desensitization the thickness of said protective layer is between 5 and 100 lattice planes of silver halide.

2. A process for the production of direct positive photographic images comprising the steps of

a. preparing a light-sensitive photographic material comprising a supported direct positive silver halide emulsion layer containing silver halide grains of composite structure, the said grains comprising a core of silver halide which is chemically sensitized the said core is coated by a silver halide shell which at the surface contains spontaneously developable fog and an outer protective layer of silver halide which is covering the developable nuclei protecting the nuclei from densitization the thickness of said protective layer is between 5 and 100 lattice planes of silver halide;

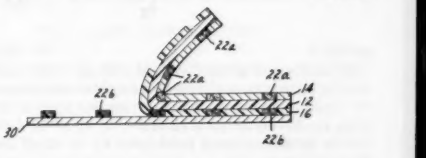
b. imagewise exposure and

c. development of the exposed layer with a developer solution containing a solvent for the silver halide of the said protective layer.

3,859,094
SHEET MATERIAL USEFUL IN IMAGE TRANSFER TECHNIQUES

Victor R. Franer, Roseville, and Darrell C. Burman, Anoka, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 5, 1973, Ser. No. 321,518
Int. Cl. G03c *1/76, 3/00, 11/12;* **B41m** *3/12*
U.S. Cl. 96—67 **8 Claims**



1. Sheet material useful in image transfer techniques comprising:

a. a thin, flexible backing which is transparent to infrared radiation;

b. an imageable layer coated over one major surface of said backing, said imageable layer being capable of providing infrared-absorptive image areas in one of the following manners:

i. upon imagewise exposure thereof to a heat pattern; or

ii. upon imagewise exposure thereof to a light pattern followed by development;

c. a continuous, non-tacky, heat-fusible infrared-transparent layer coated over the other major surface of

said backing, said heat-fusible layer being tacky at temperatures in the range of about 60° to 210°C., said heat-fusible layer comprising a mixture of resin and wax.

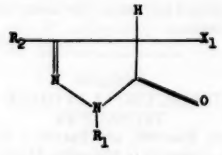
3,859,095

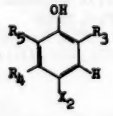
COLOR-PHOTOGRAPHIC MATERIAL WITH IMPROVED COLOR REPRODUCTION

Bernhard Morcher, Leverkusen, and Helmut Mader, Odenthal-Hahnenberg, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 95,851, Dec. 7, 1970, abandoned. This application Feb. 26, 1973, Ser. No. 335,577
Claims priority, application Germany, Dec. 13, 1969, 1962606
Int. Cl. G03c *1/76*
U.S. Cl. 96—74 **2 Claims**

1. A color photographic multiple-layer material containing colorforming couplers and comprising at least one red-sensitized, one green-sensitized and one blue-sensitive silver halide emulsion layer and dispersed in at least one of the first two layers a less reactive colored masking coupler and a more reactive colorless coupler, wherein the improvement comprises (1) at least one of the first two layers consisting partly of an oil former having a boiling point of at least 175°C distributed in said layer and containing the more reactive colorless coupler dissolved in the oil former, and (2) the less reactive colored masking coupler is contained in the non-oil former part of said layer, both couplers containing at least one long alkyl radical with 6–22 carbon atoms in a non-coupling position on the coupler, said group making said couplers non-diffusible to produce upon color development dyes of substantially the same color that remain in the layer and contribute to the same partial image, the colored coupler being selected from the group consisting of

I 

II 

in which

R_1 represents an alkyl radical with up to 22 carbon atoms or an aryl radical or a heterocyclic radical containing at least one oxygen, sulfur or nitrogen atom in the ring;

R_2 represents an alkyl radical with up to 22 carbon atoms or an amino group substituted by an alkyl-, aryl- or acyl radical;

R_3 is an amino, carbamido, sulfonamido, sulfamyl or carbamyl radical;

R_3 and at least one of R_1 and R_2 contain a relatively long alkyl radical with at least 6 carbon atoms;

R_4 and R_5 each represent a hydrogen atom, a halogen atom or an alkyl radical, or R_3 and R_4 together form the atoms required to complete a condensed, isocyclic or heterocyclic ring; and

X_1 and X_2 represent as a chromophoric substituent, an isocyclic or heterocyclic aromatic radical which is attached through an azo group,

whereby the coupling reaction of the more reactive colorless coupler is delayed with respect to the coupling reaction of the less reactive colored coupler.

3,859,096

CROSSLINKING POLYMERIC DYE MORDANTS

Donald M. Burness; Hans G. Ling, both of Rochester, and Glen M. Dappen, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 5, 1973, Ser. No. 412,992
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 A **11 Claims**

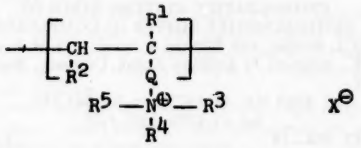
1. A photographic element comprising a support and at least one layer containing a dye mordant composition comprising the reaction product of:

a. a vinyl polymer crosslinking agent comprising a bisalkane or bisarene sulfonate having the formula:

$R—SO_3—Ch_2—Y—CH_2O—SO_2—R$

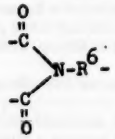
wherein R is alkyl or aryl and Y is an unsaturated divalent radical and

b. a crosslinkable vinyl copolymer comprised of first repeating units and second repeating units, said first repeating units comprising at least one third of said vinyl copolymer and represented by the formula:



wherein R^1 and R^2 are hydrogen atoms or alklyl groups and R^2 can additionally be a group containing at least one aromatic nucleus; Q is a divalent alkylene radical, a divalent arylene radical, a divalent aralkylene radical, a divalent arylenealkylene radical,

or R^2 can be taken together with Q to form a



group; wherein R^6 is an alkylene radical, R^3, R^4 and R^5 are alkyl or aryl groups, or R^3 and R^4 and the nitrogen atom to which they are attached can, together with Q, represent the atoms and bonds necessary to form a quaternized nitrogen-containing heterocyclic ring, and X^- is an anion; wherein said second repeating units are derived from an ethylenically unsaturated monomer which is substantially free of carboxyl groups.

3,859,097

FILM FORMING POLYMERIC COMPOSITIONS

Fredrick L. Hamb, and John C. Wilson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 158,526, June 30, 1971, Pat. No. 3,793,249. This application May 14, 1973, Ser. No. 360,291
Int. Cl. G03c *1/78*
U.S. Cl. 96—87 R **9 Claims**

1. A photographic element comprising a photographic emulsion coated on a film of a linear polymer comprising the

reaction product of a 2,2'-spirobi(chroman)7,7'-diol and a dicarboxylic acid of four or more carbon atoms.

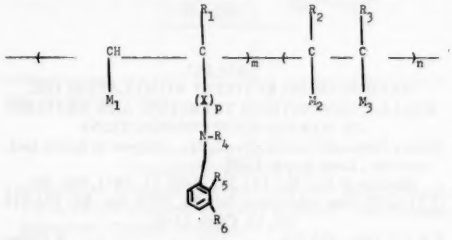
3,859,098

PHOTORESIST COMPOSITION

Hideaki Iwama; Akio Iwaki, and Hiroyoshi Yamaguchi, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed July 13, 1972, Ser. No. 271,534
Claims priority, application Japan, July 15, 1971, 46-52094
Int. Cl. G03c *1/70*
U.S. Cl. 96—90 R **15 Claims**

1. A photoresist composition consisting essentially of a solution of (A) a polymeric compound of the formula



wherein M_1, M_2 and M_3 are individually a hydrogen atom, a carboxylic acid or a carboxylic acid amide, at least one of M_1, M_2 and M_3 being a carboxylic acid; R_1 and R_2 are individually a hydrogen atom or a lower alkyl group; R_3 is a hydrogen atom, a lower alkyl group or a carboxymethyl group; X is a divalent group; p is 0 or 1; R_4 is a hydrogen atom, a lower alkyl group or a phenyl group, R_5 and R_6 are individually a hydrogen atom or a lower alkyl group and, in case p=0, R_4 and R_5, in conjunction with each other, may form a nitrogen-containing heterocyclic ring, or R_5 and R_6, in conjunction with each other, may form a naphthalene ring together with the benzene ring; and m and n are individually an integer of 5 to 10,000, in which part or all of the hydrogen atoms of the carboxyl groups contained therein have been substituted by an alkali metal, and (B) a photoactivator having a polyhalogenated methyl group capable of yielding a free radical by action of light in a solvent selected from the group consisting of methanol, ethanol, dioxane, methyl cellusolve, ethyl cellusolve, butyl cellusolve benzene, xylene, dimethyl formamide, dimethyl sulfoxide and tetrahydrofuran.

3,859,099

POSITIVE PLATE INCORPORATING DIAZOQUINONE

Constantine C. Petropoulos, Webster; Joseph A. Arcesi, and Raymond W. Ryan, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 317,585, Dec. 22, 1972, abandoned. This application Dec. 6, 1973, Ser. No. 422,374
Int. Cl. G03f *7/08*; G03c *1/54, 1/72*
U.S. Cl. 96—90 R **36 Claims**

1. In a radiation-sensitive element capable of producing a positive image upon exposure to actinic radiation and subsequent treatment with a basic solution in which said element is comprised of a support bearing a radiation-sensitive acrylic vinyl copolymer, the improvement in which, on a mole basis, from 75 to 87 percent of the repeating units of said copolymer are alkyl acrylate units,

from 10 to 22 percent of said repeating units are acryloyloxyalkyl quinone diazide acid ester units,

from 1 to 7 percent of said repeating units are acryloyloxyalkyl carboxylate units and

0 to 4 percent of said repeating units are hydroxylalkyl acrylate units.

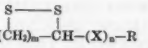
3,859,100

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING A HYDROXYAZAIDENE AND A CARBOXYL SUBSTITUTED 1,2-DITHIOLANE AS STABILIZING COMBINATION

Susumu Kondo; Tadao Sakai; Reiichi Ohi; Mitsunori Sugiyama, all of Kanagawa, and Mitsuo Numata, Osaka, all of Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Mar. 23, 1973, Ser. No. 344,399
Claims priority, application Japan, Mar. 29, 1972, 47-31434
Int. Cl. G03c *1/28, 1/34*
U.S. Cl. 96—107 **15 Claims**

1. A photographic material comprising a support having thereon a silver halide emulsion layer containing (1) at least one of a triazaindene, a tetrazaindene or a pentazaindene having at least one hydroxy group and (2) at least of a compound having a 1,2-dithiolane ring or a 1,2-dithiane ring represented by the formula:



wherein X represents an alkylene group having 1-6 carbon atoms, R represents a carboxylic acid group, a carboxylic acid salt group, a carboxylic acid ester group, or a carboxylic acid amide group, m represents 2 or 3, and n represents 0 or 1.

3,859,101

ZINC-SILICATE ESTER PRIMER COATINGS

William Wallace Slater, Louisville, Ky., assignor to Celanese Coatings & Specialties Company, New York, N.Y.

Filed Jan. 23, 1974, Ser. No. 436,005
Int. Cl. C09d *5/10*
U.S. Cl. 106—1 **9 Claims**

1. In a one package zinc rich coating composition comprising ethyl silicate, zinc and monoethanolamine, the improvement which comprises the addition of zinc chromate in the amount of about 7.5 to 50 parts by weight based on 100 parts by weight of ethyl silicate.

3,859,102

FRIT COMPOSITIONS AND GLAZE AND FLUX COMPOSITIONS OBTAINED THEREFROM

Robert Henry Fearns, and Wallace George Sanderson, both of London, England, assignors to Matthey Johnson & Co. Limited, London, England

Continuation-in-part of Ser. No. 233,362, March 9, 1972, abandoned. This application June 6, 1973, Ser. No. 367,406
Claims priority, application Great Britain, Mar. 19, 1971, 7326/71
Int. Cl. C03c *3/10, 5/00, 3/04*
U.S. Cl. 106—49 **4 Claims**

1. A frit composition suitable for comminuting and firing to provide a metal release-free or metal release-resistant ceramic glaze, said frit composition consisting essentially of 10–25 wt percent lead oxide, 50–60 wt percent silicon oxide, 12.5–25 wt percent boron oxide, 1–2.5 wt percent lithium oxide, 5–12.5 wt percent aluminium oxide, 1.7–5 wt percent sodium oxide and 1–7.5 wt percent zirconium oxide.

3,859,103

OPTICAL GLASS BODY HAVING A REFRACTIVE INDEX GRADIENT

Mitsugi Yoshiyagawa, Takarazuka; Yoshiro Ikeda, Nishinomiya, and Kohichi Nishizawa, Itami, all of Japan, assignors to Nippon, Selfoc Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1973, Ser. No. 339,066
Int. Cl. C03c *3/08*
U.S. Cl. 106—50 **10 Claims**

1. An optical glass body selected from rods and/or fibers comprising at its central axis 50 to 70 mol % of SiO_2, 10 to 30

mol % of B_2O_3, 1 to 25 mol % of Tl_2O and at least 6.5 mol % of R_2O, the total proportion of Tl_2O and R_2O being 10 to 30 mol %, the concentration of the thallium ions contained in said glass body gradually decreasing from its central axis to its peripheral surface the concentrations of the components other than Tl_2O and R_2O being each maintained substantially constant in the radial direction in a cross section perpendicular to the central axis, and the total concentration of Tl_2O + R_2O in mol % being maintained substantially constant in the radial direction in a cross section perpendicular to the central axis, with the consequence that the refractive index of the glass body continuously decreases from the central axis of the glass body to its peripheral surface, wherein R is at least one component of the group consisting of the alkali metals.

3,859,104

METHOD OF PRODUCING CEMENT CLINKER AND BINDER CONTAINING GROUND CEMENT CLINKER PRODUCED BY THIS METHOD

Ivan Alexandrovich Semchenko, ulitsa Bukbarestskaya 34/4, kv. 83; Alexandr Fedorovich Semendyaev, prospekt Gagarina, 27, kv. 310, both of Leningrad; Konstantin Grigorievich Ivanov, ulitsa Vokzskaya 28, kv. 35; Georgy Petrovich Tkachenko, ulitsa Sporinskaya, kv. 14, both of Pikalovo Leningradskoi Oblasti, and Nikolai Pavlovich Shteiert, ploschad Chernyshevskogo, 7, kv. 47, Leningrad, all of U.S.S.R.

Continuation of Ser. No. 116,613, Feb. 18, 1971, abandoned. This application Aug. 24, 1972, Ser. No. 283,271

Int. Cl. C04b *7/04*

U.S. Cl. 106—103 **2 Claims**

1. A binder consisting essentially of 25–85 parts by weight of a ground cement clinker produced from an initial mixture containing 60–80 percent by weight of belite slime produced during the complex processing of nepheline concentrates, and 20–40 percent by weight of carbonate rocks said initial mixture having been roasted at a temperature of 1300°–1550°C, 15–75 parts by weight of dehydrated belite slime and up to 3 parts by weight of gypsum.

3,859,105

STRUCTURAL ELEMENT AND A METHOD FOR MAKING SUCH ELEMENTS

Johann-George Feder, Wilhelm-Scharrelmann-Str. 2E, 2804 Lilienthal, Germany

Continuation-in-part of Ser. No. 160,484, July 7, 1971, abandoned. This application Feb. 7, 1973, Ser. No. 330,426

Int. Cl. C04b *1/00*

U.S. Cl. 106—118 **12 Claims**

1. In a method of making structural elements by hardening a mixture of filling material, a binding agent, and water wherein the hardening is carried out in a conventional manner in an autoclave by steam under pressure in excess of atmospheric pressure and at a temperature above 100°C, the addition of at least one solidifying auxiliary agent to the mixture in the form of chemically generated carbonate-products which are insoluble or difficultly soluble in water and which at least includes barium carbonate, the improvement of freezerproofness and high wet compressive strength comprising the addition of said barium carbonate in an amount necessary for conversion of all water-soluble sulfates of the mixture into water insoluble sulfates,

wherein the stoichiometric excess of barium carbonate is 0.5 to 2.0 percent by weight of the dry filling material and at least is 10 percent the weight of the average of water soluble sulfates included in said mixture.

3,859,106

AUTOCLAVED MATERIALS

Amalendu Jyoti Majumdar, St. Albans, England, assignor to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 127,361, March 23, 1971, Pat. No. 3,783,092, which is a continuation of Ser. No. 31,184, March 26, 1970, abandoned. This application July 26, 1972, Ser. No. 275,420

Claims priority, application Great Britain, Aug. 5, 1971, 36855/71

Int. Cl. C04b *7/34*

U.S. Cl. 106—120 **5 Claims**

1. An autoclaved calcium silicate material reinforced with fibres on an alkali-resistant SiO_2/ZrO_2/alkali metal oxide glass containing at least 6.0 mol percent ZrO_2.

3,859,107

METHOD OF SELECTIVELY STIMULATING OIL WELLS, COMPOSITIONS THEREFOR, AND METHODS OF MAKING SUCH COMPOSITIONS

Calixto Fortunato Garcia, Hurst, Tex., assignor to Byron Jackson, Inc., Long Beach, Calif.

Division of Ser. No. 152,362, June 11, 1971, Pat. No. 3,719,228. This application July 24, 1972, Ser. No. 274,718

Int. Cl. C08h *15/02*

U.S. Cl. 106—123 TQ **4 Claims**

1. A method of making a concentrate for a preflush composition for introduction into an earth formation having petroleum-bearing strata and brine-bearing strata to block said brine-bearing strata which comprises dissolving rosin and fatty acid in a polar solvent to form a solution, and adding a base to said solution to saponify said rosin and said fatty acid, said rosin being selected from the group consisting of wood rosin, gum rosin, acids occurring in wood rosin and gum rosin, the dimeric adducts of said acids, and mixtures thereof, said fatty acid being selected from the group consisting of tall oil fatty acids, oleic acid, linoleic acid, palmitic acid, stearic acid, eicosadienoic acid, and mixtures thereof, said base being selected from the group consisting of ammonia, ammonium hydroxide, alkali metal hydroxides, lower amines, urea, and mixtures thereof, said polar solvent being selected from the group consisting of aliphatic alcohols containing from 1 to 3 carbon atoms and glycol ethers, the weight ratio of the rosin acids to the fatty acids ranging between one part of rosin acids to two parts of fatty acids and one part of rosin acids to one-half part of fatty acids, there being a substantial amount of combined rosin acids and fatty acids in the concentrate.

3,859,108

FLOUR BASED PAPER SIZE

Franklyn O. Ware, Atchison, and Alan M. Hill, Topeka, both of Kans., assignors to Lawrence Paper Company, Lawrence, Kans.

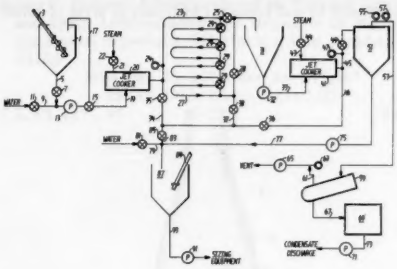
Continuation-in-part of Ser. Nos. 141,198, May 7, 1971, Pat. No. 3,775,144, and Ser. No. 273,477, July 20, 1972, abandoned. This application Jan. 29, 1973, Ser. No. 327,444

Int. Cl. C08h *7/00*

U.S. Cl. 106—150 **9 Claims**

1. A non-sludge forming flour size adapted for sizing paper consisting essentially of a cooked flour paste which is smooth stable homogeneous colloidal co-solution, substantially free of undissolved fiber, of both the protein and starch fractions of the flour, the protein fractions being present in substantially non-degraded form and the starch fraction being present in viscosity reduced form, said paste having a viscosity of about 35–70 seconds (Dudley) at about 130° F. and a solids content of about 1–20 percent and said stable co-solution being produced by cooking a slurry of an unmodified grain flour or a

grain flour modified solely by a viscosity reducing treatment with an amylase or with hydrogen peroxide, substantially



instantaneously at 115°-175° C. while subjecting the slurry to high mechanical stress.

3,859,109
PIGMENT PRODUCTION

Thomas James Wiseman, Richmond, and Peter Barry Howard, Yarm, both of England, assignors to British Titan Limited, Billingham, Teesside, England

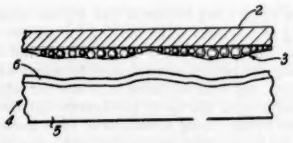
Filed Mar. 22, 1973, Ser. No. 343,977
Claims priority, application Great Britain, Mar. 23, 1972, 13725/72
Int. Cl. C09c *1/36, 1/62*
U.S. Cl. 106—300 **18 Claims**

1. A process for the production of pigmentary titanium dioxide which comprises forming an aqueous suspension or slurry of particles of titanium dioxide containing a water-soluble silicate, reducing the pH of said suspension to a value within the range 1.0 and 3.5, adding to the acidified suspension or slurry a water-soluble acidic compound of a metal selected from the class consisting of zirconium, hafnium and titanium, and an alkali or an alkali metal silicate, to maintain the pH of the suspension at a value of 1 to 3.5 and thereby precipitating a hydrous oxide of silicon on the particles, and raising the pH of the suspension to effect complete precipitation of a hydrous oxide of zirconium, hafnium or titanium on the particles.

3,859,110
SURFACE FINISHES

Norman Foster, and Rosemary P. Lee, both of Southampton, England, assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Oct. 25, 1973, Ser. No. 409,364
Claims priority, application Great Britain, Nov. 6, 1972, 51083/72
Int. Cl. B44d *1/02*; **B44c** *1/24*
U.S. Cl. 117—27 **6 Claims**



1. A method for the production of a decorative surface finish on a material, wherein a settable substance incorporating small hard microspheres is coated upon a substrate and is set thereon and the thusly coated substrate is subsequently employed in the embossment of the said material.

3,859,111
HEAT-SENSITIVE RECORDING SHEET

Takashi Takanishi, Neyagawa, and Hiroshi Nishiuchi, Kadoma, both of Japan, assignors to General Company, Ltd., Osaka-shi, Osaka-fu, Japan

Continuation of Ser. No. 191,773, Oct. 22, 1971, abandoned. This application Dec. 3, 1973, Ser. No. 421,142
Claims priority, application Japan, Nov. 20, 1970, 45.102005
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.8 **10 Claims**

1. A heat-sensitive recording sheet containing a coating layer consisting essentially of a uniform dispersion of particles of

a. at least one iron salt of an aliphatic acid;
b. at least one halogenated 8-hydroxyquinoline; and
c. an inhibitor of unusual color-development selected from the group consisting of ethylene diamine tetraacetic acid and alkali metal salts thereof.

3,859,112
WATER RESISTANT HEATSENSITIVE RECORDING COMPOSITION CONTAINING AN ETHYLENEIMINE HARDENER

Isao Kohmura, and Kiyoshi Futaki, both of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

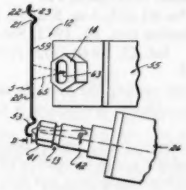
Filed July 6, 1973, Ser. No. 377,015
Claims priority, application Japan, July 20, 1974, 47-72008
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.8 **11 Claims**

1. An aqueous dispersion composition for heatsensitive recording material which comprises a normally colorless or pale-colored chromogenic compound capable of forming a color by reaction with a phenol at an elevated temperature, the said phenol, a water-soluble binder, and a hardener having 2 to 10 ethyleneimine groups for the said binder.

3,859,113
METHOD AND APPARATUS FOR APPLYING COMPOUND AND POST END REPAIR COATING TO CAN ENDS

Richard A. Horvath, Amherst; William C. Stumphauzer, and Edwin F. Hogstrom, both of Sheffield Lake, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Apr. 21, 1972, Ser. No. 246,392
Int. Cl. B44d *1/092, 1/10, 1/12*
U.S. Cl. 117—43 **16 Claims**



1. The method of applying two dissimilar materials to separate areas of a can end, which materials have differing curing temperatures, which method comprises

rotating a can end relative to two stationary nozzles located at a single spray station,

ejecting one of said materials as a liquid spray from one of said nozzles onto the bottom surface of said can end while said can end is rotating at said station,

ejecting the other of said materials from the other of said nozzles into the curl of said can end while said can end is rotating at said station, and

sequentially exposing both of said materials on said can end to a first low temperature source of heat to cure one of said materials, and then sbsequently exposing said materi-

als on said can end to a second higher temperature source of heat to cure the other of said materials.

3,859,114

METHOD OF COATING GLASS FIBERS WITH LEAD

Roger T. Pepper, Palos Verdes Peninsula, and Ernest G. Kendall, El Segundo, both of Calif., assignors to Aerospace Corporation, Los Angeles, Calif.

Filed Aug. 15, 1972, Ser. No. 280,814

Int. Cl. C03c *25/00, 25/02*

U.S. Cl. 117—47 R **5 Claims**

1. The method of coating glass fibers with lead comprising the steps of:

a. contacting the surfaces of the glass fibers with liquid sodium; thereafter,

b. immersing the glass fibers in a bath of liquid lead, and,

c. removing the glass fibers from the liquid lead bath into an atmosphere at a temperature below the melting point of lead whereby to solidify the lead adhered to the surface of the glass fiber.

3,859,115

PRODUCTION OF COATED TIO PIGMENTS

Thomas James Wiseman, Richmond, and Peter Barry Howard, Yarm, both of England, assignors to British Titan Limited, Billingham, England

Filed Mar. 2, 1973, Ser. No. 337,573

Claims priority, application Great Britain, Mar. 23, 1972, 13724/72

Int. Cl. B44d *1/14*

U.S. Cl. 117—70 A **14 Claims**

1. A process for the production of pigmentary titanium dioxide which comprises forming an aqueous suspension or slurry of particles of titanium dioxide containing a water-soluble silicate, adding an acidic water soluble salt of aluminium while maintaining the pH of the suspension at a value of 3 to 4.5 and thereby precipitating a hydrous oxide of silicon on the particles and raising the pH of the suspension or slurry to effect complete precipitation of a hydrous oxide of aluminium on the hydrous oxide of silicon coated particles.

3,859,116

COATING FOR CATHODICALLY PROTECTED STRUCTURES

Herbert E. Townsend, Hellertown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 61,475, Aug. 5, 1970, Pat. No. 3,707,450. This application Oct. 10, 1972, Ser. No. 296,479

Int. Cl. B44d *1/02, 1/14*

U.S. Cl. 117—75 **7 Claims**

1. A process for coating the metallic surface of a metallic article to which cathodic protection is to be applied which comprises:

a. applying to said surface a primer coating of a chlorinated compound of the group consisting of natural rubber and synthetic rubber containing not less than 5 percent by weight of calcium carbonate,

b. applying to the product formed in (a) an overlay as a second coating of a bitumen containing not less than 5 percent calcium carbonate.

3,859,117

COATED GLASS CONTAINER

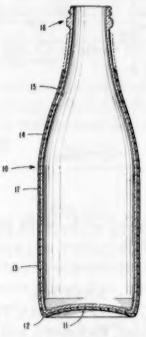
Michael Erchak, 409 Ridge Rd., Ridgewood, N.Y. 14845, and Edward R. Campagna, 289 Brookmere Ct., Horseheads, N.Y. 07450

Filed Mar. 7, 1972, Ser. No. 232,589

Int. Cl. B65d *23/08*

U.S. Cl. 117—94 **4 Claims**

1. Coated glassware having improved durability and resistance to shattering comprising: a glass container; and a coating extending substantially completely over the main exterior surface of said glass container, said coating being formed of a solid resilient locally distortable thermoplastic material uniformly adhered to said container by means of areas of adhesion interspersed with non-adhered areas and being under tension to provide hoop strength, said coating being of a thickness sufficient to provide impact resistance to said container.



3,859,118

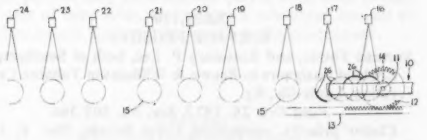
METHOD FOR SPRAYING CYLINDRICAL ARTICLES

Herbert C. Snyder, Brockway, Pa., assignor to Brockway Glass Company, Inc., Brockway, Pa.

Division of Ser. No. 121,735, March 8, 1971, Pat. No. 3,823,686. This application Feb. 15, 1973, Ser. No. 332,722

Int. Cl. B44d *1/08*

U.S. Cl. 117—94 **2 Claims**



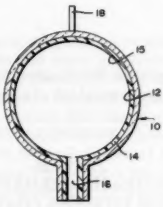
1. A method of spraying bottles or like articles which comprises spraying said bottles while moving the bottles linearly past a plurality of uniformly spaced spray guns and simultaneously rotating the bottles at a rate synchronized with their linear movement, said rotation being such that the sides of the bottles directed toward the spray guns rotate forwardly, the rotation of said bottles being so related to their linear movement and to the longitudinal spacing of said spray guns that points on the bottle peripheries which register with the several spray guns as the bottles move rotatively past said spray guns are uniformly spaced about the bottle peripheries and each of the spray guns sprays a distinct segment of the periphery of each bottle whereby the entire periphery of each bottle is sequentially sprayed by the several spray guns with the feather edges of the several sprayed segments in overlapping relation.

3,859,119

METHOD OF PRODUCING A STORAGE BULB FOR AN ATOMIC HYDROGEN MASER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Hubert Erpenbach, 315 Manford Way, Pasadena, Calif. 91105

Filed Dec. 22, 1972, Ser. No. 317,567
Int. Cl. C03c *17/00*; H01s *1/00*
U.S. Cl. 117—97 2 Claims



1. In an atomic hydrogen maser of the type including a storage bulb having an internal surface, the improvement comprising:

a thin film coating said internal surface for providing a highly uniform smooth crazing-resistant surface and substantially free of pinholes, said film consisting essentially of tetrafluoroethylene resin, and hexafluoropropylene-tetrafluoroethylene copolymer resin.

3,859,120

EXTERIOR SIDING OF AN ALUMINUM SUBSTRATE COATED WITH A DURABLE LOW GLOSS CLEAR COATING COMPOSITION CONTAINING FLUOROCARBON POLYMER PARTICLES

George T. Schramm, Darby, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 147,217, May 26, 1971, abandoned. This application Feb. 28, 1973, Ser. No. 336,762
Int. Cl. B32b *15/08*, *27/20*, *27/30*
U.S. Cl. 117—132 CF 4 Claims

1. An exterior siding comprising an aluminum substrate having firmly adhered thereto a clear semigloss synthetic thermoplastic resin coating about 0.1–5 mils in thickness and having a gloss of 10–65 percent measured at 60°;

said coating consisting essentially of a coalesced thermoplastic film-forming binder having fluorocarbon polymer particles uniformly dispersed therein;

said fluorocarbon polymer particles having a diameter of about 0.2–10 microns and are in a fluorocarbon particle to binder weight ratio of about 1:50 to 1:5 and said fluorocarbon polymer particles are selected from the group consisting of polytetrafluoroethylene, a copolymer of tetrafluoroethylene/hexafluoropropylene and mixtures thereof; and

said thermoplastic film-forming binder consists essentially of a copolymer of butyl methacrylate and isobutyl methacrylate.

3,859,121

FORMULATIONS FOR PREPARING LONG LASTING INSECT REPELLENT FINISHES FOR TEXTILE FABRICS

David A. Yeadon; Gary F. Danna, both of Orleans, and Albert S. Cooper, Jr., Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 104,763, Jan. 7, 1971, abandoned. This application Dec. 7, 1973, Ser. No. 423,047
Int. Cl. A61l *13/00*
U.S. Cl. 117—138.5 5 Claims

1. A process for retarding pyrethrin and piperonyl butoxide insect repellent contamination of foodstuffs stored in contact with cellulosic textile containing said repellent, the process comprising:

a. impregnating said textile to the extent of about 30 to 80 weight percent wet pickup with a formulation having

1. about from 1 to 10 percent of a petroleum distillate solution of from 1.2 to 5 percent pyrethrins, 12 to 50 percent piperonyl butoxide, and 12 to 20 percent of polyoxyethylene sorbitol ester of mixed C_{12} fatty acid

2. about from 1 to 14 percent of an antimigrating agent selected from the group consisting of
water soluble polyalkylene glycol,
polypropylene triol of average molecular weight 700,
polypropylene pentol of average molecular weight 400,
ethylene glycol monoricinoleate,
pentaerythritol monoricinoleate,
corn oil,
tung oil,
linseed oil,
oleic acid,
linoleic acid dimer, and
linoleic acid trimer; and

3. about 70 to 95 percent of a 0.2 to 2.0 percent aqueous hydroxyethyl cellulose thickener solution; and

b. drying the wet impregnated cellulosic textile.

3,859,122

FISH COMPOSITION FOR DRAW-TEXTURING YARN

Philip P. Burks, Jr., Greenville, N.C., and Quinton E. Cooke, Jr., Hendersonville, Tenn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 1, 1973, Ser. No. 328,851
Int. Cl. D06m *13/18*, *13/20*
U.S. Cl. 117—138.8 F 1 Claim

1. A polyethylene terephthalate textile yarn having 0.2 to 1 percent by weight, based on the weight of the yarn of a finish composition consisting essentially of

a. about 55 parts by weight of di(tridecyl)-adipate,

b. about 40 parts by weight of tetraoleatelaurate of a reaction product of one mole of sorbitol with about 30 moles ethylene oxide,

c. about 5 parts by weight of a reaction product of one mole of nonylphenol with about 5 to 6 moles of ethylene oxide, and

d. about 0.6 to 2 parts by weight of poly(oxyethylene-oxy-1,2-propylene) glycol in which there are about three oxyethylene groups for each oxypropylene group and which has a viscosity of about 9,000 SUS at 100°F.

3,859,123

METAL COATED WITH POLYVINYLIDENE FLUORIDE COATING COMPOSITIONS

Joseph A. Vasta, Woodburg, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 229,509, Feb. 25, 1972, Pat. No. 3,784,506, which is a continuation-in-part of Ser. Nos. 174,280, Aug. 23, 1971, abandoned, and Ser. No. 37,064, May 13, 1970, abandoned. This application Oct. 5, 1973, Ser. No. 403,865

Int. Cl. B32b *15/08*; C09d *3/78*

U.S. Cl. 117—132 A 3 Claims

1. Metal substrate bearing a cured coating deposited from a composition consisting essentially of

A. 25–75 percent, by weigth of binder components, of polyvinylidene fluoride;

B. 20–60 percent, by weight of binder components, of a condensation product of bisphenol A or bisphenol F and epichlorohydrin;

C. 5–25 percent, by weight of binder components, of an aminoplast resin;

D. 0.1–5 percent, by weight of binder components, of hydrophobic silica;

E. 5–100 percent, by weight of the binder components, of TiO_2; and

F. an organic liquid carrier.

3,859,124

DURABLE FIRE RETARDANT TEXTILE MATERIALS BY ANHYDROUS SOLVENT FINISHING PROCESS

James M. Thompson, Salisbury, N.C., assignor to Proctor Chemical Company, Inc., Salisbury, N.C.

Filed Sept. 25, 1972, Ser. No. 292,145

Int. Cl. C09d *5/18*

U.S. Cl. 117—136 9 Claims

1. A process for the production of durable fire retardant textile materials which comprises:

A. providing a substantially anhydrous solution comprising the following:

a. 5—50% of tris-polyhaloalkyl phosphate containing 6 to 24 carbon atoms, and a halogen atom/carbom atom ratio of at least 0.5,

b. 2–20% nitrogenous film forming binder resin,

c. 20–80% organic solvent having a boiling point below about 200°C,

d. 0.1–5% organic aminoplast cross-linking catalyst soluble in said organic solvent;

B. impregnating cellulosic textile material with said anhydrous solution to provide therein between about 5 to 50% by weight of said phosphate based upon the dry weight of said textile material;

C. removing organic solvent from the textile material resulting from step B;

D. thereafter steaming the impregnated textile material to create therein a moisture regain in the cellulosic portion of the fabric of between about 8 and 15%; and

E. heating the textile material resulting from step (D) at a temperature between about 120° and 200°C for between about 1 to 30 minutes.

3,859,125

SOLUBLE COATED PAPER

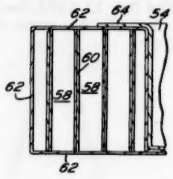
Albert R. Miller, Somerdale, N.J., and Jacob Spiegel, Philadelphia, Pa., assignors to Gilbreth Company, Philadelphia, Pa.

Filed Oct. 10, 1972, Ser. No. 296,435

Int. Cl. D21h *1/38*

U.S. Cl. 117—155 UA 4 Claims

1. A water soluble sheet material comprising a water soluble paper having a film of polyvinyl alcohol coated thereon, said film being impregnated into the interstices of said paper, said film being insoluble in water which is at a temperature below approximately 138°F, but being soluble in water above approximately 138°F, and said water soluble paper comprising



carboxy methyl cellulose that is substituted in the range from 0.1 to 0.8 with an alkali metal salt of carboxy methyl cellulose.

3,859,126

CERAMIC SUBSTRATES HERMETICALLY SEALED WITH VITREOUS COATINGS

Raymond L. Dietz, Toledo, Ohio, and Allan L. McFadden, Monroe, Conn., assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 84,541, Oct. 27, 1970, Pat. No. 3,759,727. This application Aug. 28, 1972, Ser. No. 284,413

Int. Cl. C03c *1/00*

U.S. Cl. 117—169 R 12 Claims

1. In combination with a ceramic substrate having a coefficient of thermal expansion of about 65–85 $\times 10^{-7}$ in./in./°C., a vitreous overglaze composition hermetically sealed to an exposed surface portion of said substrate and providing a vitreous coating thereon of not greater than about 2.0 mils in thickness, said vitreous coating having a composition consisting essentially of the following constituents in the indicated percent by weight ranges of the total coating composition:

Constituents	Percent by Weight
PbO	15–60
B_2O_3	12–40
ZnO	5–45

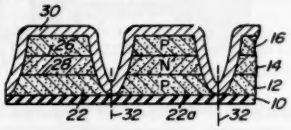
and about 5–25 percent by weight of at least one particulate ceramic material having an average particle size of less than about 5 microns, a major portion of said ceramic material being dispersed in said overglaze as discrete particles, which composition when fired at a temperature below about 600°C. will produce a substantially virtreous glass structure which is substantially impervious to atmospheric contamination and is capable of forming a strong adherent bond with said substrate.

12. In combination with a ceramic substrate having a coefficient of thermal expansion of about 65–85 $\times 10^{-7}$ in./in./°C., an overglaze composition hermetically sealed to a surface portion of said substrate and providing an interfacial seal stress thereat of between about 2,000 psi in compression to about 1,200 psi in tension, said overglaze composition including a particulate ceramic material in an amount up to about 25 percent by weight of said overglaze composition and otherwise having a composition of, by weight: (a) about 30 percent PbO, about 30 percent B_2O_3 and about 40 percent ZnO; (b) about 50 percent PbO, about 30 percent B_2O_3, about 10 percent ZnO and about 10 percent SiO_2; (c) about 40 percent PbO, about 20 percent B_2O_3, about 30 percent ZnO and about 10 percent SiO_2; or (d) about 20 percent PbO, about 30 percent B_2O_3 , about 40 percent ZnO and about 10 percent SiO_2.

3,859,127
METHOD AND MATERIAL FOR PASSIVATING THE JUNCTIONS OF MESA TYPE SEMICONDUCTOR DEVICES

Leo L. Lehner, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 24, 1972, Ser. No. 204,667
Int. Cl. B01j 17/00; H01l 5/00
U.S. Cl. 117—212 4 Claims

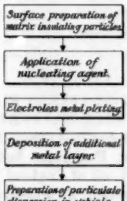


1. The method of providing mesa type semiconductor components having passivated mesa junctions, comprising the steps of: providing a silicon substrate having layers of P and N type silicon semiconductor material deposited thereon, removing the layers at spaced intervals to provide mesa type semiconductor devices therebetween, depositing polycrystalline silicon material in the valleys formed by the removal of said material for passivating the mesa junctions of said semiconductor devices and separating the mesa type semiconductor devices into individual units.

3,859,128
COMPOSITION FOR RESISTIVE MATERIAL AND METHOD OF MAKING

Darnall P. Burks, Milford, N.H.; John P. Maher, North Adams; Jacob H. Martin, Wellesley, both of Mass.; Franklin D. Frantz, Jr., Woodford, Vt., and Arthur Leo Lemoine, North Adams, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 704,449, Feb., 1968, abandoned. This application Feb. 26, 1971, Ser. No. 119,239
Int. Cl. B44d 1/20; C23b 5/62
U.S. Cl. 117—213 5 Claims

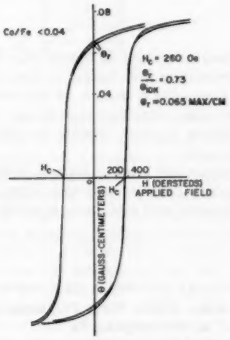

Surface preparation of matrix insulating particles.
Application of nucleating agent.
Electroless metal plating.
Deposition of additional metal layer.
Preparation of particulate dispersion in vehicle.
Application and firing resister.

1. The method of making a resistive film comprising:
a. preparing the surface of glass-containing particles, having a vitreous content of 40 to 90 percent by weight, to accept a nucleating agent,
b. applying to the surface of said particles a colloidal deposit of nucleating metal of colloidal size selected from the group consisting of a metal ion gel, a metal halide or a partially hydrolyzed metal halide,
c. depositing by electroless deposition and bonding additional metal to the surface of said particles via said nucleating metal, said additional metal comprising at least one layer of a member selected from the platinum group metals,
d. mixing said particles with a suitable binder and applying the dispersed particles onto a refractory substrate; and,
e. firing said dispersed particles and said substrate at a temperature of at least 1,000°F so that said additional metal becomes oxidized and integrated with said glass-containing particles to form a resistive film.

3,859,129
METHOD OF IMPROVING THE MAGNETIC PROPERTIES OF COBALT SUBSTITUTED MAGNETITE

Shih-Lu Chen, and James A. Murphy, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 26, 1972, Ser. No. 257,335
Int. Cl. H01f 10/00
U.S. Cl. 117—237 12 Claims



12. The method of claim 9 wherein said non-magnetic substrate is made of an ion-exchange strengthened glass.

3,859,130
MAGNETIC ALLOY PARTICLE COMPOSITIONS AND METHOD OF MANUFACTURE

Charles C. Parker, Longmont, Colo.; Rhodes W. Polleys, Concord, Mass., and Joseph S. Vranka, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 134,421, April 15, 1971, Pat. No. 3,726,664, which is a division of Ser. No. 812,433, April 1, 1969, abandoned. This application Dec. 27, 1972, Ser. No. 318,784. The portion of the term of this patent subsequent to Apr. 10, 1990, has been disclaimed.
Int. Cl. H01f 10/02
U.S. Cl. 117—240 8 Claims

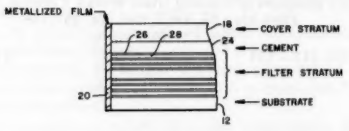
1. A method of manufacturing particulate magnetic recording media comprising:
reacting a solution consisting essentially of hypophosphite and amine borane reducing agents and reducible metal cations selected from the group consisting of cobalt cations, and mixtures of cobalt and iron cations, and mixtures of cobalt and nickel cations and mixtures thereof to form finely divided ferromagnetic alloy particles;
separating the particles;
adding a non-magnetic binder to said magnetic particles in a solvent for the binder to form a dispersion;
coating a non-magnetic base with said dispersion; and drying the coating.

3,859,131

PROCESS INVOLVING OPTICAL THIN FILM FILTERS PROTECTED AGAINST DETERIORATION FROM HUMIDITY

John L. Miles, Belmont, Mass., assignor to Baird-Atomic, Inc., Bedford, Mass.

Division of Ser. No. 93,259, Nov. 27, 1970, Pat. No. 3,709,765.
This application Oct. 16, 1972, Ser. No. 297,610
Int. Cl. B29d *11/00*; G02b *5/20*
U.S. Cl. 117—33.3 6 Claims



1. A method for making an optical thin film filter protected against deterioration from humidity comprising the steps of:
   a. vapor depositing a stratum of alternating layers of high and low index of refraction materials on a base stratum;
   b. mounting a cover stratum on said alternating layer stratum; and
   c. vapor depositing a water impermeable metalized film on the exposed edges of said base stratum, said alternating layer stratum, and said cover stratum.

3,859,132

METHOD OF CLEANING AND LUBRICATING COPPER

Saul W. Klasky, Elkins Park, Pa., assignor to G. Whitfield Richards Co., Philadelphia, Pa.

Filed Dec. 7, 1972, Ser. No. 313,132
Int. Cl. C23g *1/14*
U.S. Cl. 134—2 8 Claims

1. The method of cleaning and lubricating copper to produce bright copper comprising:
   treating copper coated with cupric oxide and cuprous oxide at a temperature of from about 800°F to 1600°F with an aqueous liquid cleaner comprising by weight,
   about 0.1% to about 2% of a lower aliphatic alcohol having the structure $C_nH_{2n+1}OH$ where n is 1 to 4,
   about 0.06% to about 2% of an alkali selected from the group consisting of sodium hydroxide and potassium hydroxide,
   about 0.1% to about 5% of a water soluble alkali metal soap, and
   water in an amount to bring the weight to 100%,
   said cleaner having a pH of from about 9 to about 12.5,
   wherein substantially all of the cupric oxide and cuprous oxide are removed from the copper.

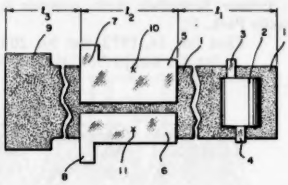
3,859,133

ELECTROCHEMICAL DEVICE HAVING A CASING FORMED OF WRAPPED TAPE

Siegfried Dickfeldt, Hagen-Haspe, and Karl Steffens, Hagen-Vorhalle, both of Germany, assignors to Varta Batterie A.G., Hanover, Germany

Filed Dec. 13, 1973, Ser. No. 424,225
Claims priority, application Germany, Dec. 18, 1972, 2261959
Int. Cl. H01m *1/02*
U.S. Cl. 136—166 10 Claims

1. A casing for an electrochemical device having protruding connectors, said casing comprising:
   an electrically insulating tape wrapped at least once completely around the circumference of said device; and
   electrical connector plates encircled by said tape and partly covered by said wrapped tape, and partly extending beyond the edge of the tape, said protruding connectors being conductively attached to said connector plates.

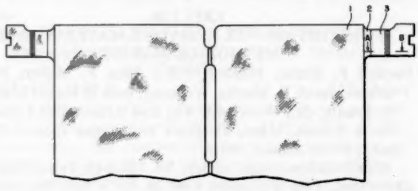


3,859,134

UNFORMED ELECTRODE PLATES FOR LEAD STORAGE BATTERIES

Rogunata Shirodker, Misburg, Germany, assignor to Varta Batterie Aktiengesellschaft, Hannover, Germany

Filed June 21, 1973, Ser. No. 372,133
Claims priority, application Germany, June 28, 1972, 2231639
Int. Cl. H01m *35/00*
U.S. Cl. 136—26 21 Claims



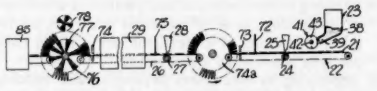
1. Unformed electrode plate for lead storage batteries comprising a plate lug at least partly covered with a coating of material which is thermoplastic, acid resistant and adherent, said coating extending into the area of said lug which will be covered by a connecting strap.

3,859,135

METHOD OF FILLING A BATTERY PLATE GRIDS WITH NON-FLOWABLE BATTERY PASTE

Maurice Roberts, Hampton-in-Arden; John Derek Harris, Solihull; Roy William Humpage, Solihull, and Geoffrey George Crow, Solihull, all of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Continuation of Ser. No. 39,126, May 20, 1970, abandoned, and a continuation-in-part of Ser. No. 814,563, April 9, 1969, abandoned, which is a continuation-in-part of Ser. No. 704,011, Feb. 8, 1968, abandoned. This application Mar. 27, 1973, Ser. No. 345,293
Claims priority, application Great Britain, Feb. 17, 1967, 7698/67
Int. Cl. H01m *35/26*
U.S. Cl. 136—27 14 Claims



1. A method of manufacturing a leadacid battery plate, comprising:

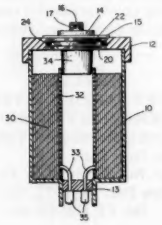
i. starting with a conductive grid having the following features:
   a. the grid has a rectangular frame with an integral lug on one side thereof and ribs interconnecting the frame members and defining with one another and the grid interstices;
   b. the interstices of the grid occupy at least 40% of the area of each face of the grid;
   c. the strength of the grid is such that it would be damaged when pasted by a traditional Lundtype or Winkeltype pasting machine;
ii. supplying to one face of the grid a paste prepared by mixing lead oxide, lead particles, sulphuric acid and water, said paste having a Globe penetration number from 18 to 28;
iii. passing the grid under a sonotrode having a sharp edge dipping into the paste;
iv. vibrating said sonotrode at an ultrasonic frequency whilst simultaneously heating a support on which the grid rests to prevent the paste sticking to the support, said sharp edge introducing ultrasonic energy into said paste whereby said paste flows into and through said interstices;
v. moving the grid relative to the sonotrode and support so as to paste the entire grid;
vi. subjecting the paste on said other face of the grid to ultrasonic energy to smooth the paste.

3,859,136

SEAWATER BATTERY WITH VALVE

Philip George Perry, and Thomas Hector Purcell, both of Raleigh, N.C., assignors to ESB Incorporated, Philadelphia, Pa.

Filed May 18, 1973, Ser. No. 361,566
Int. Cl. H01m *23/02*
U.S. Cl. 136—100 M **7 Claims**



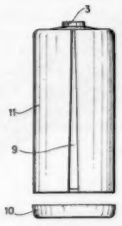
1. In a seawater battery comprising a container and a cover, the container having positive and negative electrodes therein, the cover defining a circular opening therethrough, the opening providing access between the interior of the container and the space exterior thereto, the improvement which comprises: a. a valve member located in and closing the opening in the cover, the valve member including an externally exposed face; b. a valve retaining means comprising a bar of ductile material fastened to the externally exposed face of the valve, said valve retaining means being greater in length than the diameter of the opening in the container and spanning said opening and said valve retaining means being capable of being deformed under external pressure of seawater such that when a predetermined external pressure is applied to said valve member, said valve member is urged inwardly through and out of said opening thereby allowing seawater to enter said battery.

3,859,137

CYLINDRICAL ELECTROCHEMICAL CELLS

Jean Jammet, Poitiers, France, assignor to Saft-Societe Des Accumulateurs Fixes Et De Traction, Romainville, France

Continuation of Ser. No. 237,486, March 23, 1972. This application Nov. 8, 1973, Ser. No. 414,085
Claims priority, application France, Mar. 26, 1971, 71.237486
Int. Cl. H01m *21/00*
U.S. Cl. 136—107 **11 Claims**



1. A cylindrical electrochemical cell comprising a metal container for contents of the cell, a sheath of plastic material surrounding said container, a metallic split armoring jacket comprising a rolled sheet of metal having unjoined facing axially extending edges surrounding said sheath at least in a cylindrical container region, and a metallic ring of substantially L cross-section mounted over said jacket at at least one end thereof and being of reduced overall internal diameter relative to initial diameter, so as to tighten said rolled sheet around said sheath and bring said facing end edges of said rolled sheet closely together without joining them, the overall external diameters of said mounted ring and the adjacent portions of said sheet not covered by said ring being substantially equal.

3,859,138

NOVEL COMPOSITE FUEL CELL ELECTRODE

Stephen T. Narsavage; Raymond W. Vine, both of Bolton, and Roger C. Emanuelson, Glastonbury, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 11, 1974, Ser. No. 432,581
Int. Cl. H01m *27/04*
U.S. Cl. 136—120 FC **6 Claims**

1. The method of providing a fuel cell element comprising admixing from 85 to 60 percent of an infusible, cured novolac fiber with 15 to 40 percent of high purity silicon dioxide and forming said admixture into a substrate; heat-curing said substrate in the presence of an inert gas to render said novolac fibers conductive; and disposing of said structure in a fuel cell, said percentages being on a weight basis relative to each other.

3,859,139

NOVEL COMPOSITE FUEL CELL ELECTRODE

George H. Dews, Glastonbury, Conn.; Daniel Eichner, Jacksonville Beach, Fla., and Fred S. Kemp, Rockville, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 11, 1974, Ser. No. 432,647
Int. Cl. H01m *27/04*
U.S. Cl. 136—120 FC **10 Claims**

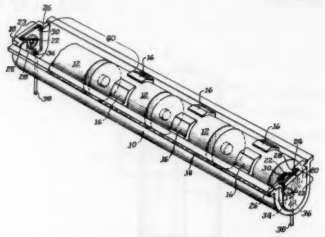
1. The method of constructing a lightweight electrode comprising the steps of filling a hydrophilic porous matrix with a fluid volatile substance; solidifying said volatile substance within the pores of said matrix; applying a catalyst layer to at least one surface of said matrix, and thereafter removing the volatile substance.

3,859,140

BATTERY HOLDER

Josef Schmidt, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed June 6, 1973, Ser. No. 367,512
Int. Cl. H01m 1/02
U.S. Cl. 136—173 8 Claims



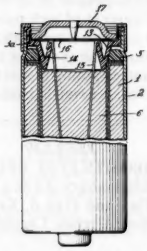
1. A battery holder comprising an elongated open trough for holding a plurality of cylindrical dry cell batteries in "in-line" configuration, said trough having opposing closed end walls of electrically insulating material, a linear array of opposing pairs of fingers projecting inwardly across the trough opening for retaining batteries within the trough and defining a gap at one end of the trough at least the size of one battery for insertion of batteries therethrough into the trough, a slide receiver molded into each end wall extending to an opening at the end wall edge defining the lip of the trough end for receiving slide members through said opening and including means for supporting the slide members within the receivers, a coiled compression spring contact member of electrically conductive material having its grounding base coil received and supported in one end wall receiver, and an electrically conductive fixed contact in the form of a plate member received and supported in the other end wall receiver.

3,859,141

DRY BATTERY SEAL AND TERMINAL CONNECTION

Howard J. Strauss, Bloomington, Minn., and Edward S. Hill, Wickliffe, Ohio, assignors to Gould Inc., Mendota Heights, Minn.

Division of Ser. No. 176,940, Sept. 1, 1971, Pat. No. 3,836,400. This application Apr. 13, 1973, Ser. No. 350,819
Int. Cl. H01m 31/00
U.S. Cl. 136—175 3 Claims



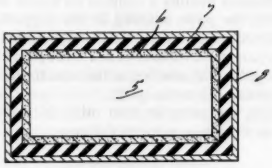
1. The method of making an electric dry cell comprising a cylindrical can having a subseal and a cell closure and terminal structure including a gasket having a stiffly flexible frustro-conical section depending from the peripheral portion thereof, which method comprises the steps of assemblying the cell to the point of closure including the insertion of a resilient subseal washer spaced below the open end of the can and engaging the can with resilient pressure, inserting the gasket and the rest of the cell closure and terminal structure and forcing the same downwardly whereby the frustro-conical section of the gasket resiliently engages the inner periphery of the subseal washer to provide a barrier to the spaces on each side of the area of engagement and thereafter completing the final closure of the cell.

3,859,142

ENCLOSED ELECTRICAL ENERGY STORAGE DEVICE WITH HALOGEN ABSORBING MEANS

Thomas Gordon Hart, Royal Oak, Mich., assignor to Occidental Energy Development Company, Madison Heights, Mich.

Filed Mar. 20, 1972, Ser. No. 236,009
Int. Cl. H01m 1/06
U.S. Cl. 136—179 7 Claims



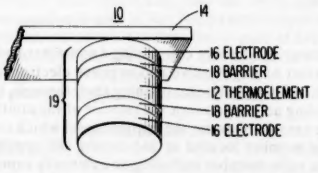
1. An enclosed halogen containing electric energy storage device capable of withstanding ruptures and preventing the release of halogen, having a halogen containing battery and an impact resistant layer means surrounding said halogen containing battery, the improvement comprising a metal containing halogen absorbing layer means surrounding the halogen battery, said abosrobing means being capable of absorbing halogen released from the battery and a resealable layer means positioned within the impact resistant layer means and surrounding the halogen abosorbing layer means and being capable of resealing after puncture, whereby the metal from the halogen absorbing layer means will react with the halogen which may escape from the halogen containing battery.

3,859,143

STABLE BONDED BARRIER LAYER-TELLURIDE THERMOELECTRIC DEVICE

Thomas Richard Krebs, Huntingdon Valley, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 57,592, July 23, 1970, abandoned. This application Dec. 18, 1972, Ser. No. 316,218
Int. Cl. H01v 1/04
U.S. Cl. 136—205 1 Claim



1. A thermoelectric device comprising:

a thermoelement comprising a material selected from the group consisting of lead telluride, bismuth telluride, lead-tin telluride, alloys of lead telluride-germanium telluride and alloys of lead telluride-lead selenide,

an electrode shoe, the material of said shoe being selected from the group consisting of stainless steel, iron, nickel, aluminum and chromium,

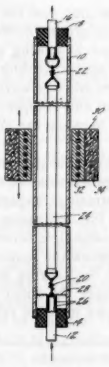
a barrier layer disposed between said thermoelement and said electrode shoe, said barrier layer comprising a material selected from the group consisting of tungsten, molybdenum, tungsten carbide, silicon carbide and carbon, said barrier layer being thin enough to deform with expansion and contraction of said shoe and said thermoelement when subjected to temperature variations and thick enough to prevent contaminants from penetrating therethrough, and

a bonding material for bonding said electrode shoe, barrier and thermoelement together comprising nickel diffused into said electrode shoe and both sides of said barrier layer and alloyed with said thermoelement to form an alloy layer between said thermoelement and said barrier layer, said alloy layer having a thickness in the range of 0.05 to 0.1 mils.

3,859,144
METHOD FOR PRODUCING NICKEL ALLOY BONDING FOIL

Malcolm Basche, West Hartford, and Urban E. Kuntz, East Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 27, 1973, Ser. No. 374,226
Int. Cl. C23c *11/02*
U.S. Cl. 148—6.3 **10 Claims**



1. A method for making a nickel-base interlayer alloy article having utility in the diffusion bonding of the nickel-base superalloys comprising:

heating a nickel-base article in a reactor to a temperature sufficient to effect boronization of the surface of said article; and

exposing said article to a gaseous stream in the reactor consisting essentially of boron trichloride admixed with hydrogen to effect boronization of the surface of said article, the ratio of boron trichloride to hydrogen during initial exposure being no greater than 15/3,500 on a volume basis.

3,859,145
PASSIVATION OF BRAZED JOINTS TO FLUORINATING ATMOSPHERES

Donald S. McGlasson, Harriman; James T. Tidwell, Oak Ridge; Charles E. Weaver, Knoxville, and Charles A. Culpepper, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 8, 1973, Ser. No. 414,027
Int. Cl. C22f *1/02, 1/04*
U.S. Cl. 148—20.3 **5 Claims**

1. The method of increasing the resistance to corrosion by fluorinating atmospheres of a brazed joint formed of base metals selected from the group consisting of aluminum and aluminum alloys and an intervening layer of aluminum-silicon alloy filler metal, said layer containing a continuous network of silicon extending to a surface of the joint, comprising heating said joint to a temperature effecting conversion of substantially all of said silicon network to discrete particles.

3,859,146
STEEL COMPOSITION, PARTICULARLY FOR ANTI-FRICTION BEARINGS

Frantisek Habrovec; Jiri Skarek; Premysl Rys, all of Brno; Frantisek Mrkva, Zbysov u Rosic; Jiri Zeman, Brno, all of Czechoslovakia; Miroslav Janik, deceased, late of Brno, Czechoslovakia (by Drahomire Janik, wife and heiress), and Zdenek Klines, Brno, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Praha, Czechoslovakia

Continuation-in-part of Ser. Nos. 883,578, Dec. 9, 1969, abandoned, and Ser. No. 98,440, Dec. 15, 1970,. This application June 1, 1973, Ser. No. 365,953
Claims priority, application Czechoslovakia, Dec. 9, 1968, 8368-68
Int. Cl. C22c *29/00*
U.S. Cl. 148—36 **2 Claims**

1. A hypereutectoid steel composition particularly for antifriction bearings consisting essentially of 0.2 to 0.4% carbon present in the martensite after hardening the remainder of the carbon being chemically bonded, the total carbon content being 0.6 to 0.9% together with 1.5 to 2.5% manganese, 1.5 to 2.5% silicon, and 0.7 to 1.2% chromium balance iron, the total of manganese and silicon being at least 3.5%, all percentages being by weight, the steel having been quenched from a temperature of 780° to 820° C, and thereafter having been subjected to tempering at a temperature of 150° - 250° C for from 1 to 2 hours.

3,859,147
HOT HARD STAINLESS STEEL

Thoni V. Philip, Reading, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 233,804, March 10, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,499
Int. Cl. C22c *39/14*
U.S. Cl. 148—37 **7 Claims**

1. A stainless steel having good hot workability, which is hardened by heating at about 2100°F and tempered to a room temperature hardness of at least about Rockwell C60 and a hot hardness greater than about Rc 50 at 1000°F, and which in its heat treated condition is substantially free of retained austenite, which by weight consists essentially of about

Carbon	0.9–1.4%
Manganese	1% Maximum
Silicon	1% Maximum
Chromium	13–19%
Molybdenum	1.5–2.75%
Vanadium	0.3–2.5%
Columbium	0.10–0.55%

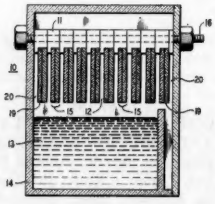
the balance being essentially iron and incidental impurities.

3,859,148

EPITAXIAL CRYSTAL GROWTH OF GROUP III-V COMPOUND SEMICONDUCTORS FROM SOLUTION

Larry Ralph Dawson, Summit; Orval George Lorimor, Warren Twp., Somerset County, and Robert H. Saul, Scotch Plains, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 1, 1972, Ser. No. 311,240
Int. Cl. H01l *7/38*
U.S. Cl. 148—172 **14 Claims**



1. A method for the simultaneous epitaxial growth of crystalline layers of Group III–V compound semiconductor on a plurality of crystalline substrate wafers comprising placing the wafers in a growth vessel together with but out of contact with a body of constituents which, when heated, form a nutrient solution and raising the temperature of the vessel to an initial temperature at least as great as would produce a saturated solution, causing the nutrient solution to contact the wafers, reducing the temperature of the vessel to a final temperature at a predetermined rate whereby epitaxial crystalline layers are grown and separating the nutrient solution and the wafers, wherein the wafers are arranged in the vessel vertically in pairs, each member of the pair contacting the other member of the pair at a broad face of the wafer, so as to essentially prevent flow of the nutrient solution in between the members of the pair, and each pair essentially parallel to and separated from a broad face of the adjacent pair by from 0.1 to 3 millimeters and the nutrient solution is caused to contact the wafers by simultaneously immersing the wafers in the nutrient solution.

3,859,149

METHOD FOR ETCHING ALUMINIUM ALLOYS

Christopher John Kay, Nottingham, England, assignor to Rolls-Royce (1971) Limited, London, England

Division of Ser. No. 288,308, Sept. 12, 1972, abandoned. This application June 13, 1974, Ser. No. 479,263
Claims priority, application Great Britain, Sept. 21, 1971, 43864
Int. Cl. C23f *1/00*
U.S. Cl. 156—22 **4 Claims**

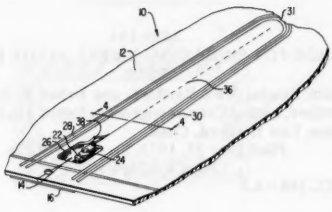
1. A method of etching an aluminum alloy which contains copper comprising treating the surface of said alloy with an aqueous solution containing copper ions, hydrogen ions and nitrate ions, the concentration of said copper ions being within the range 0.5 to 100 grams per litre, the concentration of said hydrogen ions being within the range 1.5 to 6.0 Normal and the concentration of said nitrate ions being within the range 0.5 to 5.0 Normal, the normality of said nitrate ions being arranged such that it is less than the normality of said hydrogen ions.

3,859,150

METHOD FOR INSTALLING SLIDE FASTENERS

William F. Van Amburg, Meadville, Pa., assignor to Textron Inc., Providence, R.I.

Filed Mar. 20, 1973, Ser. No. 343,059
Int. Cl. A41h *37/06*
U.S. Cl. 156—66 **9 Claims**



1. A method of installing a slide fastener on sheet material comprising the steps of

positioning the slide fastener and the sheet material between an anvil and a deforming member carrying spaced sealing protrusions and a scoring protrusion centrally disposed between the spaced sealing protrusions,

moving the deforming member relative to the anvil to engage the sheet material and compress the sheet material and the slide fastener between the anvil and the deforming member, and

securing the slide fastener to the sheet material between the anvil and the sealing protrusions of the deforming member as the sealing protrusions engage the sheet material during the moving of the deforming member relative to the anvil while at the same time forming a tear line along the sheet material between the sealing protrusions of the deforming member as the scoring protrusion of the deforming member engages the sheet material during the moving of the deforming member relative to the anvil.

3,859,151

CARPET WITH MICROCAPSULES CONTAINING VOLATILE FLAME-RETARDANT

David N. Vincent, Glenview, and Ronald Golden, Mt. Prospect, both of Ill., assignors to Champion International Corporation, New York, N.Y.

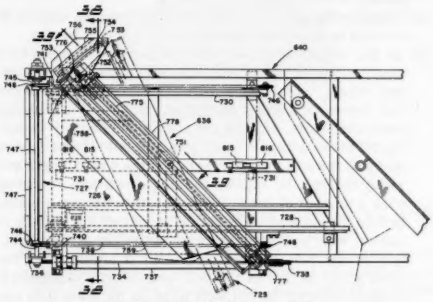
Filed Aug. 22, 1973, Ser. No. 390,522
Int. Cl. D05c *15/04*
U.S. Cl. 161—67 **20 Claims**

1. A flame-resistant, tufted product, which comprises a primary backing substrate having a first side and a second side, yarn tufted to said first side of said primary backing substrate and projecting through said primary backing substrate to form a pile on said first side, an adhesive layer superposed over said second side of said primary backing substrate, said primary backing substrate bearing microcapsules containing a flame-retarding agent, said flame-retarding agent being releasable from said microcapsules under the action of heat on said microcapsules to form a flame-resistant atmosphere surrounding said yarn tufts.

3,859,152
TIRE FABRIC CUTTER

Wilhelm Brey, Cuyahoga Falls, Ohio; William Hostetler, Santa Ana, Calif.; Earl Ferdnand Loeffler, Akron, Ohio; Hubert Ernest Kolm, Louisville, and Fred Grove Elder, Atwater, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 10,579, Feb. 11, 1970, Pat. No. 3,700,526. This application Sept. 15, 1971, Ser. No. 180,914
Int. Cl. B29h *9/04, 17/30;* **D03d** *47/50*
U.S. Cl. 156—88 **2 Claims**



FIGS. 1-36 AND 44-97 APPEAR IN U.S. PATENT 3,700,526

1. A mechanism for cutting cord-reinforced rubber tire ply material, comprising:

a. a clamp with paired spaced fingers for compressively engaging an adjacent edge of the material at spaced points;

b. a blade comprising

1. an arcuate knife edge for cutting the material edge between the points; and

2. a blunt edge adjoining the knife edge movable into the cut for tearing the material between adjoining cords;

c. means for rotating the said blade from a cutting to a tearing position;

d. means for lifting the material as the tearing proceeds; and

e. means for heating the blade.

3,859,153
REFRACTORY LAMINATE HAVING IMPROVED GREEN STRENGTH

James N. Beyer, Wilmington; Earl P. Moore, Jr., Hockessin, and Robert L. Rusher, Wilmington, all of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

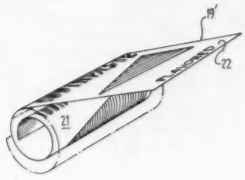
Continuation-in-part of Ser. No. 148,956, June 1, 1971, Pat. No. 3,751,276, which is a continuation-in-part of Ser. No. 49,916, June 25, 1970, abandoned. This application May 25, 1973, Ser. No. 363,803
Int. Cl. B32b *31/00*
U.S. Cl. 161—182 **19 Claims**

1. In a process for forming a refractory laminate on the surface of a substrate by dipping the substrate alternately, in either order, into (A) a slurry of particulate refractory material in a sol of negatively charged colloidal particles selected from the group consisting of silica, bentonite, attapulgite and kaolinite and (B) a slurry of a particulate refractory material in a sol of positively charged colloidal particles selected from the group consisting of alumina and silica particles coated with a polyvalent metal-oxygen compound and repeating the alternate dips until a laminate of the desired thickness is obtained, the improvement which comprises substituting (C) a slurry of zircon, alumina or an aluminosilicate in a solution of a sodium, potassium, lithium or quaternary ammonium silicate for (A) in the third or fifth dip when the first dip is (A) or in the fourth dip when the first dip is (B) and repeating (C) and (B) until a laminate of the desired thickness is built up on the substrate.

3,859,154
METHOD OF FORMING TUBULAR WALLS FOR PRODUCT CONTAINERS

Victor Monia, San Jose, Calif., assignor to Guardian Packaging Corporation, Newark, N.J.

Filed Sept. 21, 1972, Ser. No. 290,781
Int. Cl. B31c *5/00*
U.S. Cl. 156—184 **3 Claims**



1. A method of forming from a single sheet of material, a plurality of tubular structures, each of a predetermined outer circumference having only a selected one of a plurality of different messages on its exterior surface, comprising the steps of: providing an indefinite length web of an opaque sheet material; applying a plurality of different messages on one side surface of said material in an indefinite length repeat pattern with each message being spaced from the next message along the length of said web a distance substantially equal to said outer circumference desired for said tubular structure; separating a first section of said web having a length equal to a predetermined whole number (other than one) multiple of the distance between said messages from the remainder of said web with said one side surface portion thereof having a first selected one of said plurality of messages at one end of said first section, and convolutely winding said first section lengthwise into tubular form from the end of said first section opposite from said one end having said selected message in a direction placing said one side surface thereof on the exterior side of the rolled form and for a number of wrappings generally equal to the number of messages on said first section to thereby form a first tubular structure with said selected one of said plurality of messages on the exposed exterior surface thereof and remaining messages of said first section being hidden from view by the outer wrapping; separating a second section of said web having a length equal to a predetermined whole number (other than one) multiple of the distance between said messages from the remainder of said web with said one side surface portion thereof having a second selected one of said plurality of messages different from said first selected message at the one end of said section corresponding to said one end of said first section and convolutely winding said second section lengthwise into tubular form from the end of said second section opposite from said one end having said selected second message in a direction placing said one side surface thereof on the exterior side of the rolled form and a number of wrappings generally equal to the number of different messages on said second section to thereby form a second tubular structure with said selected second message on the exposed exterior surface thereof and the remaining messages of said second section being hidden from view by the outer wrapping.

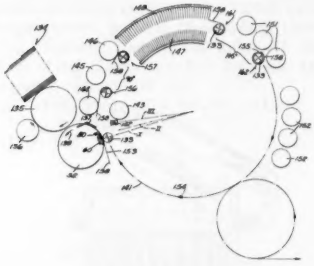
3,859,155
AUTOMATIC LABEL WRAPPER

Karl Dullinger, Neutraubling, Germany, assignor to Hermann Kronseder, Neutraubling, Germany

Continuation of Ser. No. 120,513, March 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 663,289, Aug. 25, 1967, Pat. No. 3,586,580. This application July 26, 1973, Ser. No. 383,029

Int. Cl. B65c *3/16, 9/28*

U.S. Cl. 156—212 **4 Claims**



1. A method of applying labels around the outside of a container, said method comprising the steps of advancing a series of containers on a path past a label applier and past label pressing apparatus, applying the middle of a label to a side part of a container but leaving leading and trailing label wings extending away from the container, first blowing the leading wing at least partly around the containers, pressing said leading wing against the container, rotating said container for the first time in one direction while pressing a portion of the trailing wing against the container, advancing the container while it is not rotating and concurrently pressing portions of both wings against the container, rotating the container for the second time in the same direction while pressing the remaining portion of the trailing wing against the container and overlapping it against the said leading wing.

3,859,156
METHOD FOR LAMINATING WARP AND WEFT OF FIBROUS MATERIALS IN A WET MANNER

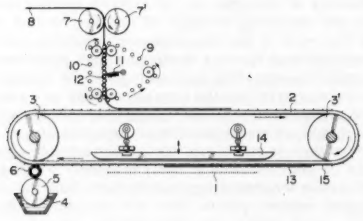
Masahide Yazawa; Haruhisa Tani, and Setsuya Tsuyama, all of Tokyo, Japan, assignors to Polymer Processing Research Institute Ltd., Tokyo, Japan

Filed Jan. 17, 1974, Ser. No. 434,340

Claims priority, application Japan, Jan. 18, 1973, 48-8123

Int. Cl. B32b *31/00*

U.S. Cl. 156—265 **6 Claims**



1. In a method for laminating warp and weft webs of elongated fibrous materials, an improvement in a wet manner, which comprises,

a. cutting a weft web consisting of a number of elongated fibrous materials arranged in parallel in a plane of a given width to a length corresponding to the width of a warp web also consisting of a number of elongated fibrous materials arranged in parallel in a plane of a given width, one by one, to give cut weft webs;

b. attaching the resultant cut weft webs onto the surface of an endless belt wetted with water and circulating along an upper horizontal course and a lower one at a speed faster than the feeding speed of the weft web, successively in said upper circulating course, leaving a predetermined space between each of said cut weft webs, while maintaining the original arrangement of said fibrous materials in the weft web through surface tension of water wetting the surface of the belt;

c. bringing the cut weft webs attached onto the surface of the belt to said lower circulating course one by one;

d. at the instant whenever one cut weft web comes to a position overlapped wholly with the warp web after overlaid, which is travelling horizontally and crosswise below said lower circulating course of the belt at a distance apart therefrom, pushing off and simultaneously knocking off the said cut weft web attached onto the belt, from said belt towards the warp web over the whole length and width thereof, by rapidly pushing down and returning back a number of rows of linear edges which are situated behind the cut weft webs, inside the circulating surface of the cut weft web and crosswise to the circulating direction of the belt and are circulated at substantially the same speed as that of the belt, and thereby successively cross-overlaying the cut weft webs on the warp web one by one without leaving any gaps therebetween; and

e. bonding the whole into a laminate of warp and weft.

3,859,157
METHOD OF MAKING A SCORED PAPER LAMINATE

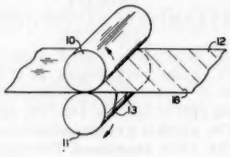
Burton D. Morgan, Hudson, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio

Filed Aug. 8, 1972, Ser. No. 278,767

Claims priority, application Canada, Feb. 22, 1972, 135329

Int. Cl. B32b *31/00*

U.S. Cl. 156—268 **2 Claims**



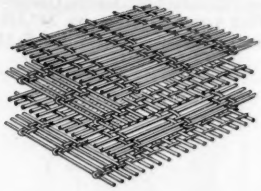
1. A method of making a laminate for use in making a label or the like from a paper fibrous material layer, including the steps of applying a liquid release coating to one surface of the paper layer and drying it thereon, stabilizing the release coated paper layer at about 50 percent relative humidity, thereafter forming a plurality of weakened reduced thickness continuous score lines in the other surface of the paper layer by mechanically crushing or compacting the fibers in the paper at the scored line to less than 50 percent of the original thickness of the paper, and laminating a layer of adhesive and a face sheet to said paper layer with said adhesive layer being intermediate the paper layer and said sheet and being bonded to said one surface of said paper layer.

3,859,158

PRODUCTION OF PERVIOUS LOW DENSITY CARBON FIBER REINFORCED COMPOSITE ARTICLES

Im Keum Park, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 135,698, April 20, 1971, Pat. No. 3,779,789. This application Apr. 3, 1973, Ser. No. 347,594
Int. Cl. C09j 5/02; D03d 11/00
U.S. Cl. 156—331 9 Claims



1. A process for the production of a pervious low density carbon fiber reinforced composite article comprising:

a. providing a continuous length of a fibrous open weave tape comprising a plurality of adjacent substantially parallel and laterally spaced linear warp ends of an organic polymeric fibrous material capable of undergoing conversion to a carbonaceous fibrous material substantially coextensive with the length of said tape wherein no substantial lateral contact is made between said adjacent warp ends, and a fibrous weft pick interlaced with said warp ends in a plain weave construction at a frequency of about 2 to 8 picks per inch of said tape with said weft pick being provided under a tension sufficient that said linear configuration of said warp ends is substantially unimpaired,

b. continuously passing said tape in the direction of its length through a series of heating zones while substantially suspended therein comprising heating in a carbonization zone containing a non-oxidizing atmosphere at a temperature of at least about 900°C. to form a fibrous tape which contains at least 90 per cent carbon by weight while preserving an open weave construction within said resulting tape wherein no substantial contact is made between said laterally adjacent warp ends,

c. impregnating a plurality of layers of said tape with a thermosetting resinous material while substantially maintaining lateral interstices between said adjacent warp ends within a given layer of said tape, and

d. substantially curing said thermosetting resinous material while in intimate association with a plurality of previously superimposed layers of said tape to form a pervious low density composite article of increased thickness containing said thermoset resinous material in a concentration of about 20 to 50 per cent by weight based upon the total weight of said composite article, having a pore volume of approximately 10 to 75 per cent by volume of the total composite article, and a bulk density of about 0.4 to 1.4 grams/c.c.

3,859,159

APPARATUS FOR FORMING A RUPTURABLE SEAL

Elbert P. Carter, Wilmington, and Gerrit Nieuweboer, Claymont, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

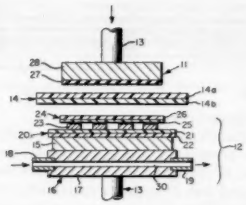
Continuation-in-part of Ser. No. 204,418, Dec. 3, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 447,872
Int. Cl. B30b 15/34; B32b 31/00
U.S. Cl. 156—581 8 Claims

1. An apparatus for forming rupturable seals between two thermoplastic surfaces comprising a resilient backing plate, a heating platen and a means for compressing said thermoplastic surfaces between said backing plate and heating platen; said heating platen comprising:

a. a metal plate,

b. means to maintain said metal plate at a constant temperature,

c. thermally conductive electrical insulating film bonded to said metal plate,



d. at least one raised electrically conductive heating surface bonded to said insulating film and having the shape of the desired rupturable seals,

e. a thermally conductive, non-stick film disposed over said heating surface; and

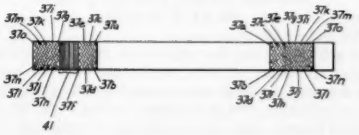
f. means to separately control the power supplied to each region of said heating surface defining one of said rupturable seals.

3,859,160

REINFORCED CARBON BODIES

Glenn R. Marin, Ransomville, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 48,063, June 22, 1970, Pat. No. 3,712,428. This application Sept. 2, 1971, Ser. No. 177,910
Int. Cl. C01b 31/00; B32b 1/04
U.S. Cl. 161—42 14 Claims

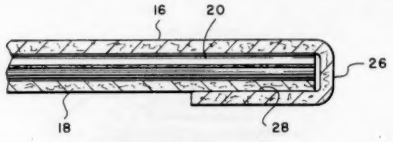


1. A reinforced carbon body comprising (1) an underlying network of reinforcing carbon fibers; and (2) a matrix of carbonized binder binding together the underlying network of reinforcing fibers, characterized in that the reinforcing fibers comprise fibers which are successively circumferentially wound, axially compressed, and radially overlapped throughout the circumference of the body in each cross-sectional plane containing the axis of the body; said body having at least one perimeter which is adapted to bear circumferential stress, the circumferentially wound reinforcing fibers adjacent to said stress-bearing perimeter conforming substantially to the shape of said stress-bearing perimeter.

3,859,161
RECTANGULAR-SHAPED BOARD OF FLAT CORRUGATED MATERIAL WITH AN IMPROVED EDGE STRUCTURE

John W. McLeod, Dallas, Tex., assignor to Lone Star Container Corporation, Dallas, Tex.

Continuation of Ser. No. 185,288, Sept. 30, 1971, abandoned.
This application Nov. 5, 1973, Ser. No. 412,633
Int. Cl. B32b *3/04, 3/28;* B31f *1/08*
U.S. Cl. 161—44 1 Claim



1. A workboard comprising:

a rectangular-shaped board of flat corrugated material, said material comprising first and second liners of paper sheet material bonded in a spaced parallel relationship by a corrugated web of paper material whereby pins or tacks may be inserted into the board, at least one planar work surface formed by the exterior of one of said liners for receiving printing thereon, the periphery of said board defined by first and second elongated parallel spaced edges perpendicular to the length of the corrugations and by third and fourth elongated parallel spaced edges parallel to the length of the corrugations, a plurality of spaced creased areas extending across said board parallel to the length of said corrugations whereby said board can be folded for storage,

protective edge means on the periphery of said board along said third and fourth edges, said protective edge means comprising an extension of said first liner beyond said corrugated web and said second liner, said extension being folded over and around both corners of said corrugated web and along the outside of said second liner and, an adhesive material attaching said extension to said second liner.

3,859,162
PRE-PREG MATERIALS, CHEMICALLY INTEGRAL COMPOSITE FOAM STRUCTURES PREPARED THEREFROM, AND METHODS OF PREPARATION

James William Johnson, Marine on St. Croix; John E. Peterson, Lindstrom, and Charles Reich, St. Paul, all of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed May 11, 1973, Ser. No. 359,526
Int. Cl. B32g *3/26*
U.S. Cl. 161—160 17 Claims

1. A self supporting fiber reinforced pre-preg comprising a cohesive admixture of fiber reinforcing material and fused thereon a solid, flowable, isocyanate-containing polycarbodiimide prepolymer, said prepolymer having a curing catalyst dispersed therein, said catalyst capable of catalyzing the reaction between isocyanate groups to form carbodiimide linkages under the influence of heat.

2. A method of making a chemically integral, fiber reinforced, composite foam structure comprising

a. providing a pre-preg material comprising solid polycarbodiimide prepolymer fused onto reinforcing fibers, said prepolymer having a curing catalyst homogeneously dispersed therein, said prepolymer capable of curing to form a polycarbodiimide polymer with the application of heat,

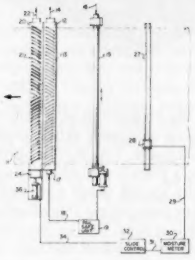
b. contacting said pre-preg material with foamable polycarbodiimide precursors and maintaining said precursors adjacent said pre-preg material, and

c. heating said pre-preg material and said foamable polycarbodiimide precursors substantially simultaneously under conditions sufficient to cause foaming of said foamable polycarbodiimide precursors and to cause crosslinking of said fused prepolymer in said pre-preg, and crosslinking occurring essentially without the formation of autogeneous voids visible to the naked eye.

3,859,163
MOISTURE CONTROL OF FELTS AND WEBS IN PAPERMAKING SYSTEMS

James Haythornthwaite, Joliette, Quebec, Canada, assignor to Scapa Dryers (Canada) Ltd., Joliette, Quebec, Canada

Filed Apr. 3, 1973, Ser. No. 347,520
Claims priority, application Canada, Jan. 5, 1973, 160686
Int. Cl. D21f *1/32;* B08b *3/00*
U.S. Cl. 162—198 7 Claims

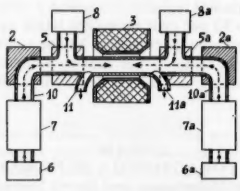


1. A method of cleaning an endless movable felt of a paper making machine including sensing variations in the amount of moisture in the felt across the width thereof, causing vacuum from a vacuum box adjacent and extending transversely of the felt to be applied to the felt in the zone extending across a portion of the width of the felt, and positioning said vacuum zone in alignment with a relatively high moisture zone of the felt, including transversely positioning said zone by relatively transversely-moving three members associated with the vacuum box, each member having a transversely-extending series of apertures cooperating to provide said zone.

3,859,164
METHOD AND DEVICE FOR OBTAINING CONTROLLED NUCLEAR FUSION BY MEANS OF ARTIFICIAL PLASMA

Karl Nowak, Mollardgasse 8, A10 Vienna 6, Austria

Filed May 20, 1971, Ser. No. 142,708
Claims priority, application Austria, May 21, 1970, 4534/70
Int. Cl. G21b *1/02*
U.S. Cl. 176—2 13 Claims



1. A method for obtaining controlled nuclear fusion by means of artifical plasma, formed by leading together atomic ions and electrons, characterized by the fact that atomic ion beams (**1**, **1***a*) after they have been previously accelerated via deflection magnets (**5**, **5***a*) are admixed with previously and separately accelerated electronic beams (**4**, **4***a*), and thus formed plasma beams of high density are are directed against each other within a magnetic contraction (**3**).

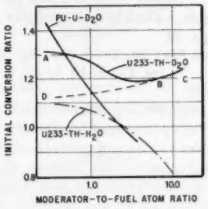
3,859,165
EPITHERMAL TO INTERMEDIATE SPECTRUM PRESSURIZED HEAVY WATER BREEDER REACTOR

Alvin Radkowsky, Tel Aviv, Israel; George Henry Conley, Pittsburgh, Pa.; Henry Wesley Ryals, Bethel Park, Pa.; John Nils Hanson; Joseph David Cohen, both of Pittsburgh, Pa., and William Arthur Weinreich, III, Bethel Park, Pa., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Continuation-in-part of Ser. No. 59,171, July 29, 1970, abandoned. This application Oct. 13, 1972, Ser. No. 297,545

Int. Cl. G21c *1/00*

U.S. Cl. 176—18 **2 Claims**



1. In a pressurized heavy water moderated and cooled epithermal nuclear breeder reactor comprising an active core having a plurality of fuel modules containing fissile and fertile material, said modules including movable and stationary regions each of said regions having fuel rods containing said fissile and fertile material, each of said stationary regions surrounding one of said movable regions; means for axially positioning said movable regions whereby said reactor reactivity is controlled by variable geometry control, said fissile and fertile material respectively selected from uranium-233 and thorium-232 and having a fertile to fissile atom ratio in the range from 5 to 50; and a reflector surrounding the fissile and fertile material, the improvement comprising said active core having a moderator-to-fuel atom ratio in the range from 3.5 to 1.00, each of said movable and stationary module regions arranged into a uniform rod lattice with uniform fissile and fertile fuel loading and divided into first and second axially aligned zones, said first movable zone aligned adjacent to the first stationary zone, said first movable zone and said second stationary zone having a weight percent UO_2 different from that of said second movable and first stationary zones, said first movable and second stationary zones having from about 9 to about 14 weight percent UO_2 and said second movable and first stationary zones having from about 4 to about 8 weight percent UO_2, said fuel rods ranging in diameter from 0.250 to about 0.500 inches, said rods having a triangular pitch array with a rod spacing from 0.055 to 0.095 inches.

3,859,166
COMBINED STORAGE TANK AND SUMP FOR NUCLEAR REACTOR

Edward Paul Flynn, Windsor, Conn., and Arthur Carter Rogers, Phoenix, Ariz., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 1, 1972, Ser. No. 311,185

Int. Cl. G21c *15/18, 13/10*

U.S. Cl. 176—38 **2 Claims**

1. A nuclear reactor system comprising:

a closed containment structure providing a containment atmosphere therewithin;

a reactor vessel within said containment structure having a nuclear core therein, a coolant inlet opening and a coolant outlet opening;

primary coolant conducting means coupled to said inlet and outlet opening for providing a closed primary fluid circulating loop;

a coolant pump for said circulating loop interposed in said primary conducting means;

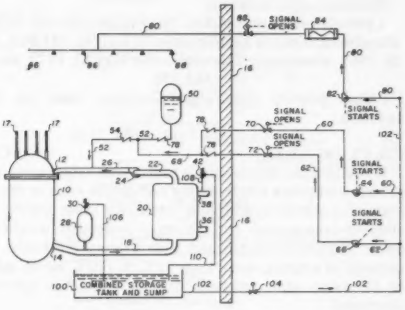
a combined storage tank and sump within said containment structure for storing a supply of emergency coolant and for accumulating any coolant fluid discharged into said containment atmosphere;

conduit means for conducting coolant from said combined storage tank and sump to said primary coolant conducting means;

means for driving the emergency coolant from said tank into said primary coolant conducting means in the event of a loss of coolant accident in said reactor system;

a heat exchange means interposed in said primary coolant conducting means between said outlet opening in said reactor vessel and said coolant pump, said heat exchange means having secondary coolant conducting means in heat exchange relationship with said primary coolant conducting means;

a vent line coupled to said secondary coolant conducting means;



a pressure relief safety valve interposed in said vent line within said containment structure for releasing fluid in said secondary coolant conducting means in order to lower the pressure therein;

a discharge line connected to said pressure relief safety valve and in fluid communication with said combined storage tank and sump for discharging released fluid from said safety valve thereinto;

a pressurizer for controlling the pressure of the coolant in said primary coolant conducting means;

a second pressure relief safety valve coupled to said pressurizer for releasing fluid contained therein in order to lower the pressure in said primary coolant conducting means; and

a second discharge line connected to said second safety valve and in fluid communication with said combined storage tank and sump for discharging released fluid from said second safety valve thereinto.

3,859,167
MICROBIAL PRODUCTION OF BIOTIN

Shigeo Ogino, Nishinomiya; Shigehisa Fujimoto, Takarazuka; Hiroo Wada, Takatsuki, and Yukio Tanigawa, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company Ltd., Osaka, Japan

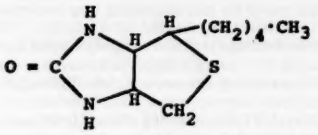
Filed Mar. 20, 1973, Ser. No. 343,023

Claims priority, application Japan, June 13, 1972, 47-59267; Nov. 24, 1972, 47-118454

Int. Cl. C12d *5/00*

U.S. Cl. 195—51 R **18 Claims**

1. A process of causing the microbiological transformation of a compound A having the following formula:



which comprises enzymatically oxidizing the said compound A to obtain biotin in the presence of a microorganism selected from the group consisting of those belonging to Pseudomonas, Corynebacterium, Arthrobacter, Brevibacterium, Mycobacterium, Nocardia, Candida, Cunninghamella, Cladosporium, Gibberella, Penicillium and Mucor which are capable of oxidizing the compound A.

3,859,168

PROCESS OF INACTIVATING RABIES VIRUS

Rudolph Barth, and Oskar Jaeger, both of Marburg/Lahn, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg/Lahn, Germany

Continuation-in-part of Ser. No. 56,224, July 15, 1970, abandoned, which is a continuation of Ser. No. 737,865, June 18, 1968, abandoned. This application May 22, 1973, Ser. No. 362,820

Claims priority, application Germany, June 22, 1967, 1617350

Int. Cl. C12k *7/00;* **A61k** *23/00*

U.S. Cl. 195—1.2 **3 Claims**

1. Method for inactivating a pathogenic rabies virus which process comprises freeze drying said rabies virus in the presence of a gelatin hydrolyzate containing cross linking urea-alkylene-urea groups and having a molecular weight from about 15,000 to 60,000 and then heating the freeze dried material at a temperature from 30°C to 110°C for 15 minutes to 12 weeks until the pathogenicity thereof is completely destroyed.

3,859,169

ENZYMES ENTRAPPED IN GELS

Kenneth F. O'Driscoll, Waterloo, Ontario, Canada, and Masatsugu Izu, Troy, Mich., assignors to Polymeric Enzymes, Inc., Buffalo, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,653

Claims priority, application Great Britain, May 3, 1972, 20692/72

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 **26 Claims**

1. An enxymatically active substantially insoluble gel formed by polymerizing to a gel under mild conditions in the absence of molecular oxygen a reaction mixture containing
   a. water in a quantity of from about **20** to about **75%** by weight of said reaction mixture,
   b. at least one water-soluble polymerizable monomer dissolved in the water at least a major proportion of which is a glycol unit containing monomer selected from the group consisting of monomethacrylates of glycol, monomethacrylates of polyhydric alcohols, monoacrylates of glycol, monoacrylates of polyhydric alcohols, monomethacrylates of dialkylene glycols, monomethacrylates of polyalkylene glycols, monoacrylates of dialkylene glycols and monoacrylates of polyalkylene glycols, the quantity of said monomer being from about **50%** to about **200%** by weight of the quantity of water,
   c. at least one cross-linking agent for said at least one monomer soluble in the water-monomer solution,
   d. at least one polymer soluble in the reaction mixture and selected from the group consisting of polymers of a glycol unit containing monomer selected from the group consisting of monomethacrylates of glycol, monomethacrylates of polyhydric alcohols, monoacrylates of glycol, monoacrylates of polyhydric alcohols, monomethacrylates of dialkylene glycols, monomethacrylates of polyalkylene glycols, monoacrylates of dialkylene glycols and monoacrylates of polyalkylene glycols, polyvinylpyrrolidone, poly(ethyleneimine), albumin, agarose, dextran, poly(vinyl crown ether), polyacrylamide, polyacrylic acid, polyvinylsulphate and mixtures of at least two of such polymers, said polymer being present in a quantity of from about **1** to about **50%** by weight of the monomer,
   e. a free radical initiating system, and
   f. an enzyme dissolved in said mixture.

3,859,170

METHOD OF PRODUCING ANTIMICROBIAL AGENT M-141 AND ITS SALTS

Alma W. Goldstein, Lake Bluff, Ill., assignor to Abbott Laboratories, Chicago, Ill.

Filed May 20, 1960, Ser. No. 30,488

Int. Cl. A61k *21/00*

U.S. Cl. 195—80 **4 Claims**

1. A method of producing antimicrobial agent M-141 which comprises cultivating the organism *Streptomyces flavopersicus* NRRL 2820 under submerged aerobic conditions in a culture medium containing assimilable sources of carbohydrate, organic nitrogen and inorganic salts until substantial antimicrobial activity is produced by said organism in said culture medium.

3,859,171

L-2-AMINO-4-M ETHOXY-TRANS-3-BUTENOIC ACID

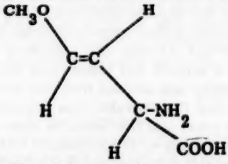
Thomas Casimir Demny, Livingston, and James Parnell Scannell, Bloomfield, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 191,074, Oct. 20, 1971, Pat. No. 3,739,022. This application May 7, 1973, Ser. No. 357,990

Int. Cl. C12k *1/00*

U.S. Cl. 195—96 **1 Claim**

1. A process for preparing a compound of the formula



which comprises fermenting the microorganism *Pseudomonas aeruginosa* ATCC 7700 under submerged aerobic conditions to obtain the compound of the formula I and thereafter isolating said compound from the fermentation broth.

3,859,172

MULTIPLE RABBLED ROTARY HEARTH

Charles R. Wilt, Jr., Pittsburgh, Pa., assignor to Salem Corporation, Pittsburgh, Pa.

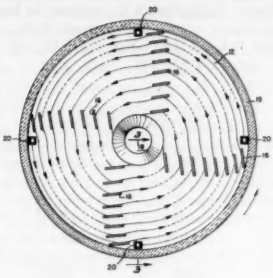
Filed Apr. 18, 1973, Ser. No. 352,474

Int. Cl. C10b *1/00, 7/00, 31/00*

U.S. Cl. 202—117 **10 Claims**

1. A multiple rabble arrangement for a furnace enclosure comprising a roof and side walls and a horizontally disposed flat hearth mounted for rotation within said furnace enclosure and wherein a plurality of rows of materials deposited onto said hearth are maintained in distinct rows from time of deposit onto and time of exit of said materials from onto said hearth, while advancing the distinct rows from feedport to outlet, a plurality of opposed sets of feedports for the feed of materials onto the said hearth, a plurality of diametrically opposed sets of rabbles mounted in the roof of said furnace enclosure and extending to a position in close proximity to the said rotary hearth, said sets of rabbles maintaining said rows of materials in distinct rows on the said hearth, while simulta-

neously advancing said distinct rows of materials progressively from the said feedports to the outlets, the feedports and the



outlets being disposed, respectively, in the periphery and center of the hearth in opposed relationship.

3,859,173

VERTICAL, MULTISTAGE-FLASH, FALLING FILM COLUMN FOR DISTILLING BRINE

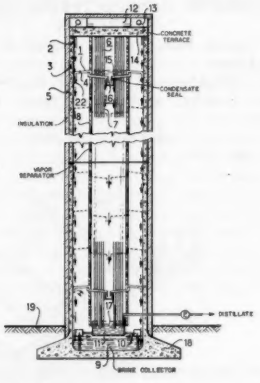
Raymond Barckhausen, Paris, France, assignor to Societe Generale D'Enterprises, Paris, France

Filed Jan. 29, 1973, Ser. No. 327,698

Claims priority, application France, Jan. 27, 1972, 72.02729

Int. Cl. B01d *3/02, 3/08, 3/00, 3/28*; **F28b**

U.S. Cl. 202—173 **12 Claims**



1. A vertical distilling column comprising:

a vertical casing with a central portion,

vertically extending condensing means having tubular walls for flow of liquid to be preheated therethrough located in the casing,

a series of substantially horizontal floor means arranged one below the other within the casing and limiting therebetween a plurality of distillation chambers each having a condensing region and an evaporating region with the tubular walls of the condensing means extending through successive floor means in floor supporting relationship therewith such that the floor means are movably supported with respect to the casing, whereby the floor means are permitted to move axially within the casing due to axial movements of the condensing means during distillation, and

means for placing the distillation chambers in sealed liquid flow communication with one another in use whereby a portion of the liquid to be evaporated flows down an interior wall of an evaporating region and condensed purified liquid flows downwardly through successive condensing regions downwardly through the column in non-mixing relationship with the flow of liquid to be evaporated in use.

3,859,174

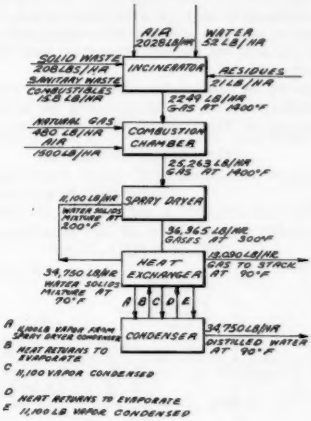
RECOVERY OF POTABLE WATER FROM SANITARY WASTE USING SOLID WASTES AND REFUSE AS A HEAT SOURCE

Fred W. Taylor, P.O. Box 918, Bartow, Fla. 33830

Filed Nov. 14, 1972, Ser. No. 306,383

Int. Cl. B01d *3/00*

U.S. Cl. 203—10 **14 Claims**


AIR 2028 LB/HR
WATER 52 LB/HR
SOLID WASTE 208 LBS/HR
SANITARY WASTE COMBUSTIBLES 158 LB/HR
INCINERATOR
RESIDUES 21 LB/HR
2249 LB/HR GAS AT 1400°F
NATURAL GAS 400 LB/HR
AIR 1500 LB/HR
COMBUSTION CHAMBER
25,263 LB/HR GAS AT 1400°F
11,100 LB/HR
SPRAY DRYER
WATER SOLIDS MIXTURE AT 200°F
36,965 LB/HR GASES AT 300°F
HEAT EXCHANGER
9,090 LB/HR GAS TO STACK AT 90°F
34,750 LB/HR WATER SOLIDS MIXTURE AT 90°F
A B C D E
CONDENSER
34,750 LB/HR DISTILLED WATER AT 90°F
A 11,100 LB. VAPOR FROM SPRAY DRYER CONDENSER
B HEAT RETURNS TO EVAPORATE
C 11,100 VAPOR CONDENSED
D HEAT RETURNS TO EVAPORATE
E 11,100 LB. VAPOR CONDENSED

1. A process for disposing of daily requirements of liquid sanitary wastes, with recovery of clean potable water therefrom, and for disposing of daily requirements of solid wastes, said process consisting essentially of incinerating the solid wastes at a temperature of about 1,300°F to about 2,000°F to produce combustion gases and a solid, substantially non-combustible residue, thereafter atomizing aqueous liquid into said combustion gases to lower the temperature thereof to about 275°F to about 350°F, removing entrained solids from the cooled combustion gases, thereafter cooling the resulting gas stream by indirect heat exchange with liquid sanitary wastes to a temperature of 70°–180°F to condense water vapor in said gases, the liquid sanitary wastes from the indirect heat exchange being the aqueous liquid which is atomized into the combustion gases, thereafter separating condensed water from the remainder of the gases and discharging the gases, cooling the condensed water to a temperature of less than about 90°F, to produce clean potable water.

3,859,175

PROCESS FOR PURIFYING ACRYLIC ACID BY PLURAL STAGE DISTILLATION AND AN EXTRACTION

Tetsuya Ohrui, Niihama; Yasuhito Sakakibara, Saijo; Yukinaga Aono, Niihama; Michio, Kato, Niihama; Hiroshi Takao, Niihama, and Masami Ayano, Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 21, 1973, Ser. No. 362,210

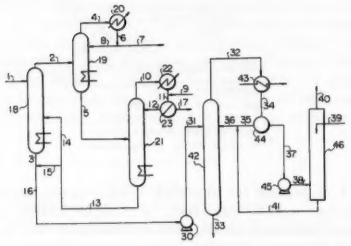
Claims priority, application Japan, May 24, 1972, 47-51843; May 24, 1972, 47-51846

Int. Cl. C07c *57/04*

U.S. Cl. 203—46 **4 Claims**

1. A process for separating acrylic acid, which comprises:

1. feeding a mixture comprising acrylic acid, acetic acid, water and a dual solvent consisting of an organic solvent which forms an azeotropic mixture with acrylic acid, acetic acid and water (the first component) and another organic solvent having a boiling point lower than that of acetic acid (the second component) to the top of a first distillation column operated under a pressure of 300 mmHg absolute or less, thereby distilling the mixture, obtaining acrylic acid at a high concentration and a portion of the feed of the first component, almost free from acetic acid from the bottom, and distilling off all of the second component, a portion of the first component, all of water and 10 percent by weight or more of the feed of acrylic acid together with acetic acid from the top as a distillate;
2. feeding the distillate to a middle stage of a second distillation column, thereby distilling the distillate, obtaining the second component and water from the top as a distillate, and obtaining a solution of concentrated acetic acid, acrylic acid and the first component from the bottom or bottoms;
3. feeding the resulting bottoms to a middle stage of a third distilling column, thereby distilling the bottoms under a pressure of 300 mmHg absolute or less, obtaining a mixture containing acetic acid and the first component from the top, and obtaining a solution of acrylic acid and the first component from the bottom as bottoms;
4. feeding the bottoms from the third distillation column to the first distillation column;
5. feeding a solution of acrylic acid in the first component obtained from the bottom of the first distillation column to the top of a fourth distillation column, thereby distilling the bottoms under a pressure of 300 mmHg absolute or less, with water as an entrainer for the first component, obtaining an azeotropic mixture of water and the first component together with acrylic acid from the top as a distillate, and obtaining acrylic acid at a high concentration from the bottom as a product;
6. separating the distillate of the fourth distillation column into an oil layer and an aqueous layer by decantation;
7. feeding the oil layer containing the first component and acrylic acid to the bottom of an extraction column, thereby extracting acrylic acid with water as an extracting agent and recovering the first component as a raffinate;
8. refluxing the resulting aqueous acrylic acid extract after being joined with the aqueous layer separated by the decantation back to the top of the fourth distillation column, and
9. recovering acrylic acid.



3,859,176

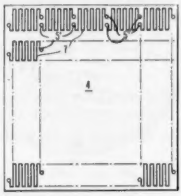
METHOD FOR MAKING THIN FILM TUNGSTEN-THORIUM ALLOY

David C. T. Shang, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1973, Ser. No. 335,199

Int. Cl. C23b *7/02, 5/52, 5/32*

U.S. Cl. 204—12 **12 Claims**



1. The method of electrodepositing thin film W—Th alloy on a conductive substrate, said method comprising the steps of:

passing an electric current through a heated plating bath containing the substrate, said substrate forming the cathode of the electrical system used to pass said electrical current, said bath comprising two aqueous solutions, the first solution consisting of WO_3, Na_3PO_4 and H_2O, and the second solution consisting of $Th(SO_4)_2$ and H_2O, and

adding concurrently to passing said current said second solution to said first solution at a predetermined rate.

3,859,177

METHOD OF MANUFACTURING MULTILAYER CIRCUITS

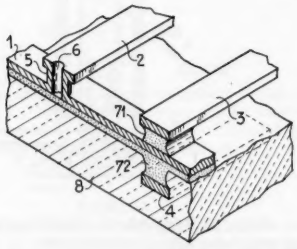
Claude Gigoux, Paris, France, assignor to Thompson-CSF, Paris, France

Filed Sept. 19, 1972, Ser. No. 290,357

Claims priority, application France, Oct. 15, 1971, 71.37163

Int. Cl. C23b *5/48*

U.S. Cl. 204—15 **5 Claims**



1. A method of manufacturing multilayer electrically conductive circuits composed, of a stack of plane conductors alternately separated by plane insulator layers, through-connections being arranged between the conductors of different layers, the method comprising the following steps of:

a. depositing two layers of photosensitive resin on either side of a substrate of a first metal having two large opposite faces easily attackable by chemical agents;

b. photoengraving windows in said layers at the location of predetermined through-connections, chemically piercing through-holes in said metal at the location of said windows;

c. photo-engraving first openings on one face in the rest of the resin according to the design of first predetermined conductors and parallel to a first direction and second openings on the opposite face according to the design of

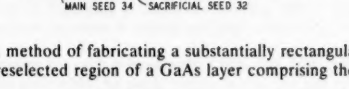
second predetermined conductors and parallel to a second direction perpendicular to said first direction;
d. depositing by electrolysis a second metal having a high resistance to said chemical agents, said second metal forming said first and second conductors;
e. using successively photographic techniques and chemical action, etching away at least a portion said first metal so as to produce third openings laying bare approximately half the width of each first conductor and fourth openings laying bare the whole width of each second conductor, said third openings extending along the whole length of said first conductors and said fourth openings extending only along a portion of said second conductors;
f. replacing said first metal removed and etched away in step (e) by an insulator and thereafter eliminating by chemical action the remaining first metal;
g. replacing said first metal removed by step (f) by an insulator.

3,859,178

MULTIPLE ANODIZATION SCHEME FOR PRODUCING GAAS LAYERS OF NONUNIFORM THICKNESS

Ralph Andre Logan, Morristown, and Barry Irwin Miller, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 17, 1974, Ser. No. 434,286
Int. Cl. C23b *5/48, 5/46, 9/00*
U.S. Cl. 204—15 **15 Claims**



1. A method of fabricating a substantially rectangular step in a preselected region of a GaAs layer comprising the steps of:
a. growing a native oxide layer on a major surface of said GaAs layer by submersing said GaAs layer in an anodization bath comprising H_2O_2 having a pH less than about 6;
b. removing selected portions of said oxide layer so as to expose said GaAs layer adjacent said preselected region, a native oxide mask remaining over said region; and
c. immersing said GaAs layer in an anodization bath comprising H_2O_2 having a pH less than about 6 so that the exposed portions of said GaAs layer are consumed in the formation of a native oxide layer thereon, thereby to form said step in said GaAs layer.

3,859,179

CALIBRATION SOURCE EMITTING HIGH ENERGY BETA PARTICLES

Bruce A. Staples, Idaho Falls, Idaho, assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 15, 1974, Ser. No. 461,321
Int. Cl. C23b *5/48, 5/50*
U.S. Cl. 204—15 **3 Claims**

1. A method of preparing a calibration source which emits high energy beta particles, comprising simultaneously electrodepositing nickel and ruthenium-106 onto a stainless steel disc, said ruthenium-106 being carried by natural ruthenium, washing the disc with water, and immediately electroplating the disc with nickel.

2. A method of preparing a ruthenium-106 film badge calibration source comprising:
a. preparing an electrode, osition cell consisting of a stainless steel disc as cathode, a rotating platinum disc disposed one centimeter from the cathode as anode, and containing an electrolyte solution consisting of 1.25 M nickel sulfate — 0.21 M nickel chloride — 0.66 M boric acid and including 0.8 mg ruthenium carrier containing ruthenium-106
b. operating the electrodeposition cell at a current density of 3 mA/cm^2 for a time sufficient to deposit 75 percent of the ruthenium-106 activity on the stainless steel disc;
c. immediately removing the solution from the cell;
d. rinsing the cell including the cathode with water;
e. adding a nickel chloride — nickel sulfate electrolyte solution to the cell; and
f. operating the electrodeposition cell at a current density of 3 mA/cm^2 for 20 minutes to seal the ruthenium-106 activity within the calibration source by electroplating a nickel coating thereon.

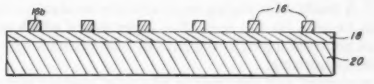
3. A method according to claim **2** wherein the source is removed from the cell, covered for one minute with 1 ml of 10 % HNO_3 — 2% HF at 100°F., washed with water, returned to the cell which was filled with plating solution, and plated with nickel using a platinum anode, 1 cm in diameter, above an area on the source onto which nickel did not originally plate.

3,859,180

METHOD FOR ENCAPSULATING DISCRETE SEMICONDUCTOR CHIPS

Turner Elijah Hasty, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 104,316, Jan. 6, 1971, Pat. No. 3,739,462.
This application Oct. 16, 1972, Ser. No. 298,117
Int. Cl. C23b *5/48, 7/00*
U.S. Cl. 204—16 **6 Claims**



1. In a method of fabricating a semiconductor device the steps of:
a. forming a layer of a soft metal to overlie a substrate;
b. pressing a first surface of one or more discrete semiconductor chips into a region of said soft metal layer, said region being relatively large with respect to each of said discrete chips;
c. forming an encapsulating layer to overlie said one or more semiconductor chips and said region of said soft metal layer adjacent thereto;
d. separating said substrate and soft metal layer thereon from said encapsulated one or more semiconductor chips thereby exposing said first surface of each discrete chip; and
e. bonding a relatively thick layer of thermal conductive metal to said exposed first surface of each of said discrete chips.

3,859,181

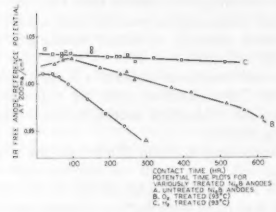
STABILIZATION OF NICKEL BORIDE CATALYST IN POTASSIUM HYDROXIDE ELECTROLYTES

Stuart G. Meibuhr, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 291,587, Sept. 25, 1972, abandoned. This application Oct. 31, 1973, Ser. No. 411,221
Int. Cl. C23b *7/00;* **H01m** *43/04*
U.S. Cl. 204—16 **3 Claims**

1. A method for treating fine particles of nickel boride catalyst for promoting the electrochemical oxidation of hydrazine in the presence of an aqueous potassium hydroxide electrolyte comprising contacting said nickel boride at a tempera-

ture of about 90°C to about 100°C with an atmosphere consisting essentially of hydrogen for a time sufficient to retard


CONTACT TIME (HR.)
POTENTIAL TIME PLOTS FOR VARIOUSLY TREATED Ni-S ANODES
A. UNTREATED Ni-S ANODES
B. O_2 TREATED (95°C)
C. H_2 TREATED (95°C)

the performance decay rate (dv/dt) and increase the useful life of the catalyst on continued contact with the electrolyte.

3,859,182

COATING PRINTED CIRCUIT BOARDS WITH TIN OR TIN-LEAD ALLOY AND TIN-LEAD FLUOBORATE PLATING BATHS

John E. Vander Mey, Stirling, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 4, 1973, Ser. No. 321,092
Int. Cl. C23b *5/14, 5/38, 5/46*
U.S. Cl. 204—24 **15 Claims**

7. A method for plating an electrically conductive substrate with tin or a tin and lead alloy a portion of which substrate does not form a part of the path of least resistance to current flow, comprising:

immersing said substrate in an acidic aqueous plating bath at a temperature between about 50° and about 150° F., said plating bath comprising per liter of bath from about 350 to about 450 grams per liter of free fluoboric acid; from about 2 to about 15 grams per liter of an amino acid chain compound; from about 15 to about 82 grams per liter of metal, said metal being selected from tin and a mixture of stannous tin and lead, said mixture containing at least 5 weight percent tin; and from about 0.01 to about 1 gram per liter of bath of beta-naphthol; and

applying sufficient negative voltage to said substrate relative to an anode within said bath to cause a current density at said substrate of between about 7 and about 35 amperes per square foot.

15. The method according to claim **7** wherein said electrically conductive substrate comprises at least one electrically conductive surface which defines a hole through an electrical printed circuit board.

3,859,183

PROCESS FOR PRODUCING N-PHOSPHONOMETHYL GLYCINE TRIESTERS

John H. Wagenknecht, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 7, 1973, Ser. No. 413,476
Int. Cl. C07b *29/06;* **C07f** *9/40*
U.S. Cl. 204—59 R **5 Claims**

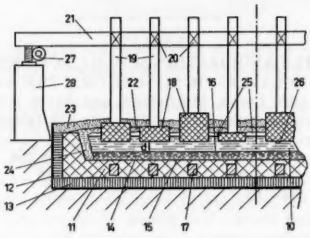
1. A process for producing a triester of N-phosphonomethyl glycine which comprises subjecting a solution of a tetra ester of N-phosphonomethylimino diacetic acid in an organic solvent containing a supporting electrolyte to a direct electric current at a current density of about 0.01 to about 100 ma/cm² whereby said tetra ester is oxidized to the triester, said solvent being one in which the tetra ester and the supporting electrolyte is soluble.

3,859,184

METHOD OF OPERATION OF A CELL FOR RECOVERY OF ALUMINIUM BYELECTROLYSIS OF ALUMINIUM OXIDE IN A FLUORIDE MELT

Kiranendu Chaudhuri, Gampel, and Peter Bachofner, Liebefeld, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed July 10, 1973, Ser. No. 378,032
Claims priority, application Switzerland, July 18, 1972, 10749/72
Int. Cl. C22d *3/12;* **B01k** *3/00*
U.S. Cl. 204—67 **2 Claims**



1. A method of operation of a cell having an anode and means for changing the average interpolar distance, for recovery of aluminium by electrolysis of aluminium oxide in a fluoride melt, comprising measuring values of electrical energy supplied to the cell at respective successive predetermined intervals of time, comparing each of said measured values to a corresponding predetermined value of electrical energy supply for the respective interval of time, said corresponding predetermined value being based upon a predetermined rate of energy supply, adding successively any difference between each of said measured and said corresponding predetermined values with appropriate sign, to obtain a cumulative total, comparing said cumulative total to predetermined lower and upper limits, and changing the average interpolar distance to establish an energy supply more nearly equal to the predetermined value.

3,859,185

CALCIUM CONTAINING LEAD ALLOY ANODES FOR ELECTROWINNING

Andrew G. Hood, III.; David L. Adamson; Terrell N. Andersen, and Kenneth J. Richards, all of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

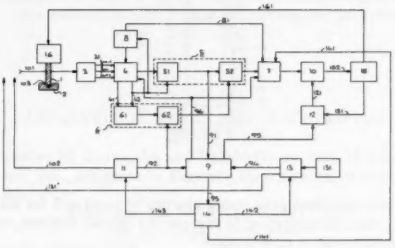
Filed Feb. 27, 1974, Ser. No. 446,217
Int. Cl. C22d *1/16;* **B01k** *3/06*
U.S. Cl. 204—108 **4 Claims**

1. A process for electrowinning copper from an aqueous sulfuric acid electrolyte containing dissolved copper values comprising immersing at least one anode and at least one cathode in said electrolyte and impressing an electrical potential across said anode and cathode to deposit copper on said cathode, the anode being a lead alloy containing from about 0.025 to about 0.10 percent calcium by weight.

3,859,186
SYSTEM AND METHOD FOR REGULATING ELECTRIC DISCHARGE MACHINING GAP

Werner Ullmann, Locarno; Bernardo Ferroni, Ascona, and Bernd Schumacher, Losone, all of Switzerland, assignors to A.G. fur industrielle Elektronik AGIE Losone b. Locarno, Losone, Switzerland

Filed Dec. 7, 1972, Ser. No. 312,864
Claims priority, application Switzerland, Aug. 17, 1972, 12214/72
Int. Cl. B23p *1/17, 1/02, 1/00*
U.S. Cl. 204—129.25 **7 Claims**



1. A method of controlling the gap width in electro-erosion apparatus having at least one gap between a workpiece electrode and a tool electrode, having also means for generating repeated voltage pulses of predetermined length at intervals and thereby producing electric discharges across said gap and drive means including a motor for moving one or both said electrodes to increase or reduce said gap, comprising the steps of:

measuring for each voltage pulse (**100, 200, 300**) applied to said gap (**103**) the peak voltage across the gap and also, when the peak voltage exceeds a predetermined value, measuring the time period between the moment the voltage across the gap first rises above a first predetermined value and the moment the voltage across the gap reaches a second lower predetermined value thereafter,

combining the results of the measurements to produce a regulating value that increases with increases of either or both of the measurements, and

regulating the width of said gap with reference to said regulating value by controlling the initiation, direction, power and braking of relative movement of said electrodes, the sense in which the regulation is thus operated being defined by the requirement that at a time when the electrodes are not already in relative movement an increase in the regulating value, at least when it persists, causes the electrodes to be moved closer together (FIG. **6**, lines **2** and **5** of table).

3,859,187
ELECTROLYTIC PROCESS FOR THE SURFACE MODIFICATION OF HIGH MODULUS CARBON FIBERS

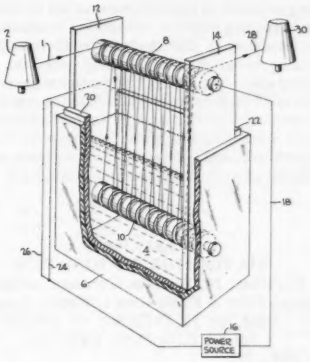
Melvin L. Druin, West Orange; Andrew H. Diedwardo, Parsippany, and James A. Parker, Somerville, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 292,005
Int. Cl. C01d *7/34;* **B01k** *1/00*
U.S. Cl. 204—130 **16 Claims**

1. An improved electrolytic process for enhancing the ability of an electrically conductive carbonaceous fibrous material containing at least about 90 percent carbon by weight and exhibiting a mean single filament Young's modulus of at least about 60 million psi and a predominantly graphitic x-ray diffraction pattern to bond to a resinous matrix material comprising:

a. immersing said fibrous material in an aqueous electrolytic solution of sodium hypochlorite having a pH of about 8 to 12 and an active chlorine concentration of about 1 to 7 percent by weight,

b. providing a cathode in contact with said aqueous electrolytic solution and in a spaced relationship to said immersed fibrous material,



c. applying electrical current to said fibrous material while immersed in said aqueous electrolytic solution of sodium hypochlorite at a current density of about 2.5 to 12 milliamps per square centimeter of surface area of said immersed fibrous material for a residence time of about 2 to 10 minutes with said fibrous material serving as an anode,

d. washing the resulting carbonaceous fibrous material to remove residual aqueous electrolytic solution adhering to the same, and

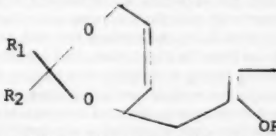
e. drying the same.

3,859,188
PROCESS FOR PREPARATION OF PROSTAGLANDINS

Lawrence Libit, 240 E. O'Keefe St., Palo Alto, Calif. 94303

Filed Mar. 1, 1972, Ser. No. 230,939
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 R **4 Claims**

1. In a process for the preparation of intermediates useful in the production of prostaglandins, the steps which comprise subjecting a compound corresponding to the formula



where R_1 and R_2 are the same or different alkyl, cycloalkyl or aralkyl groups containing up to 8 carbon atoms, and R^3 is acyl,

to irradiation in the presence of a photosensitizing agent to effect photocyclization of said compound.

3,859,189
POLYMERIZATION OF ACRYLONITRILE USING RADIATION IN THE PRESENCE OF DIMETHYLSULPHOXIDE AND A PROTEIN

I. G. Murgulescu; Tatiana Oncescu, and I. Vlagiu, all of Bucharest, Romania, assignors to Central De Chimie Fizica, Bucharest, Romania

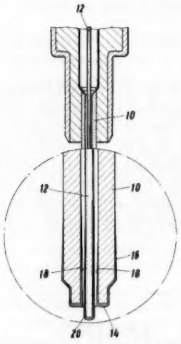
Continuation-in-part of Ser. No. 30,959, April 22, 1970, Pat. No. 3,736,241. This application Dec. 18, 1970, Ser. No. 99,718
Claims priority, application Romania, Dec. 18, 1969, 61906
Int. Cl. C08d *1/00*; C08f *1/16*
U.S. Cl. 204—159.12 2 Claims

1. Method for the polymerization of acrylonitrile in a field of ionizing radiation in order to improve the tinctorial properties of the resulting polymer, comprising irradiating the acrylonitrile monomer in dimethylsulphoxide reaction medium with ionizing radiation, slowly adding, when the conversion has reached about 65 percent, 1 to 5 percent aqueous solution of protein in 10 cc dimethylsulphoxide to the reaction medium under continuous stirring and in an inert atmosphere, the proportion used being 2 cc protein solution for from 6 to 20 p.w. acrylonitrile, and continuing the irradiation until a product of improved tinctorial properties is obtained.

3,859,190
NIB TUBE FOR DRAWING PENS

Harald Koelichen, Jr., Isardam, Germany, assignor to Standardgraph Filler & Fiebig GmbH, Wohler, Germany

Filed July 11, 1972, Ser. No. 270,658
Int. Cl. C23c *15/00*; B43k *1/06*
U.S. Cl. 204—192 3 Claims

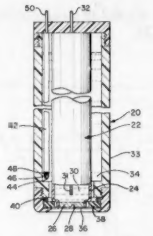


1. A method for providing a mechanical wear resistant surface layer on a nib tube for a drawing pen wherein the nib tube is provided with an end surface and with side surfaces that extend away from the end surface, said nib tube including a hollow opening having a cleaning wire passing through the opening wherein the method comprises applying to the nib tube by cathodic sputtering a layer of wear resistant material, wherein the surface layer is applied at a greater thickness to the end surface of the nib tube than to the side surface and applying a mechanically wear resistant surface layer to the cleaning wire by cathodic sputtering at the same time that the surface is applied to the nib tube by cathodic sputtering.

3,859,191
HYDROGEN CYANIDE SENSING CELL

Martin S. Frant, Newton; John H. Riseman, and John A. Krueger, both of Cambridge, all of Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Filed Apr. 9, 1973, Ser. No. 349,224
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 P 11 Claims



1. An improved gas-sensing electrochemical cell for measuring the hydrogen cyanide content of a sample solution, said cell comprising in combination

a potentiometric ion-selective membrane electrode for providing an electrochemical potential responsively to the activity of silver ions or cadmium ions in solution;

a body of electrolyte in contact with the ion-selective portion of said potentiometric ion-selective electrode, said electrolyte including ions of a soluble cyanide complex of the metal of the ion to which said potentiometric electrode is selective.

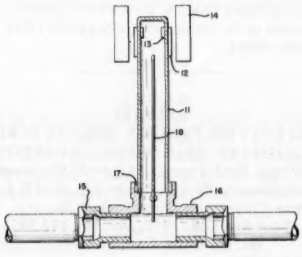
a reference electrode in contact with said electrolyte for providing a substantially fixed potential with respect to said electrolyte;

a hydrogen cyanide permeable membrane arranged so as to separate the electrodes and electrolyte from said sample solution.

3,859,192
APPARATUS FOR THE MEASUREMENT OF THE OXYGEN CONTENT OF A GAS STREAM

Lyle K. Barnes, Michigan City, Ind., and J. Kenneth Jacobsen, Madeira Beach, Fla., assignors to Milton Roy Company, St. Petersburg, Fla.

Filed Aug. 17, 1973, Ser. No. 389,127
Int. Cl. G01n *27/28*, *27/46*
U.S. Cl. 204—195 S 4 Claims



1. A sensor for measuring the oxygen content of sample gas flowing in a stream in a conduit comprising:

a tube of solid electrolyte material exhibiting the property of oxygen ion conductivity with negligable electronic conductivity, said tube having a closed end and an open

end adapted to be in communication with the sample stream flowing in said conduit,

a pair of electrodes respectively disposed on the outside surface and on the inside surface of said tube,

a heater for heating that portion of said tube which said electrodes are in contact,

a baffle disposed inside of said tube and having one end thereof adapted to extend into said conduit, the other end thereof extending to the region of said electrodes so that a portion of said sample gas stream is deflected across one surface of said baffle into the region of said electrodes and thence over the other surface of said baffle back into said sample gas stream, and

means connected to said electrodes for measuring the oxygen content of said portion of said sample gas stream.

3,859,193

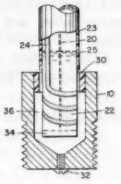
APPARATUS FOR COULOMETRIC STRIPPING ANALYSIS

Theodore M. Bednarski, and Harold Hauer, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Nov. 20, 1973, Ser. No. 417,688

Int. Cl. G01n *27/42, 27/46*

U.S. Cl. 204—195 H **2 Claims**



1. An apparatus for coulometric stripping analysis which comprises (a) a rotatable working electrode-electrolysis cell comprising a pyrolytic graphite-coated graphite container having an interior coating of a thin, continuous coherent film of mercury; (b) means connected to said electrode-electrolysis cell for rotating the cell; (c) conductive means for connecting said electrode-electrolysis cell to an electrode terminal; (d) a reference electrode-counter electrode structure comprising a hollow tube, of a semi-porous rigid insulator, closed at both rnf, and containing an aqueous solution of an electrolyte in contact with a reference electrode terminal, said terminal, said hollow tube having attached to the exterior surface thereof an inert metal counter electrode, said reference electrode-counter electrode structure being movably mounted above said electrode-electrolysis cell and capable of being inserted into said electrode-electrolysis cell so that a space of about 2 to about 4 millimeters is provided between said electrode-electrolysis cell and said reference electrode-counter electrode structure; (e) means for reproducibly aligning said electrode-electrolysis cell and said reference electrode-counter electrode structure; and (f) means for introducing an inert gas into the space between the electrode-electrolysis cell and said reference electrode-counter electrode structure.

3,859,194

ELECTRODEPOSITION APPARATUS

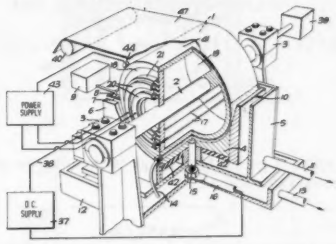
Frederick Barrett, Wirral, England, assignor to The Electricity Council, London, England

Division of Ser. No. 243,390, April 12, 1972, Pat. No. 3,817,843. This application Feb. 13, 1974, Ser. No. 442,020

Claims priority, application Great Britain, Apr. 13, 1971, 9236/71

Int. Cl. C23b *7/04, 5/68;* **B01k** *3/00*

U.S. Cl. 204—208 **6 Claims**



1. An electrodeposition apparatus comprising a drum cathode arranged for rotation about a horizontal axis and having its cylindrical surface formed of titanium, a carbon anode having its operative surface uniformly spaced from the cylindrical surface of the cathode and extending around a portion thereof thereby forming an arcuate gap, means for maintaining a uniform rate of laminar flow of electrolyte around the arcuate gap between the anode and the cathode, means for rotating the drum cathode at a uniform rate, sensing means arranged to provide in use an output indicative of the temperature of the non-immersed portion of the titanium surface adjacent entry into the electrolyte, heating means responsive to the output of the sensing means for heating the drum cathode to maintain the sensed temperature at a predetermined value, means for maintaining an electrolyte at a predetermined temperature, a source of electrical current connected to the anode and cathode and being arranged to supply a predetermined electrolyzing current, means for maintaining the temperature of the anode at a predetermined value, and means for stripping the deposited foil from the cathode.

3,859,195

APPARATUS FOR ELECTROCHEMICAL PROCESSING

John M. Williams, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

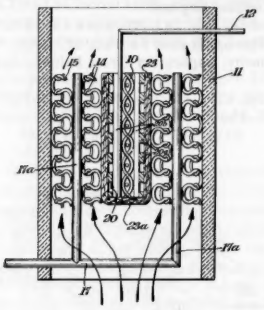
Continuation-in-part of Ser. No. 290,642, Sept. 20, 1972, abandoned. This application Oct. 17, 1973, Ser. No. 407,248

Int. Cl. B01k *3/00, 1/00*

U.S. Cl. 204—272 **9 Claims**

1. An electrolytic cell comprising at least two interfunctioning electrodes disposed at a common transverse level within a vertically oriented leak-tight housing provided, at the lower end, with an inlet port for electrolyte introduction, and at the upper end with an outlet port for discharge of said electrolyte, at least one of said electrodes being of uniformly reticulated open construction so as to oppose low resistance to electrolyte flow therethrough and having an extended surface area over which a substantially uniform reaction-producing electrical potential is maintained with respect to surrounding electrolyte throughout the portion of said area in confrontation with the electrolyzing area of the remaining electrode, and said remaining electrode being disposed within an electrically insulator separator envelope closed on all sides except at the edge adjacent to said outlet port fabricated from an electrolyte-

inert material which is relatively liquid-tight in construction so as to bar the ready passage of said electrolyte therethrough



but which is permeable enough to permit ionic passage between said electrodes.

3,859,196

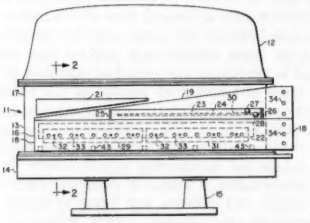
ELECTROLYTIC CELL INCLUDING CATHODE BUSBAR STRUCTURE, CATHODE FINGERS, AND ANODE BASE

Walter W. Ruthel, Grand Island, and Leo G. Evans, Tonawanda, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Jan. 3, 1974, Ser. No. 430,427

Int. Cl. B01k *3/00*

U.S. Cl. 204—278 **33 Claims**



1. An electrolytic cell comprising a cathode busbar structure, cathode fingers having a cathode finger structure, and an anode base structure wherein:

I. Said cathode busbar structure comprises at least one lead-in busbar and a plurality of busbar strips which have different relative dimensions, said lead-in busbar and said plurality of busbar strips are fabricated from a highly conductive metal and are positioned in such a configuration wherein the lead-in busbar and the plurality of busbar strips are adapted to carry an electric current and to maintain a substantially uniform current density through the cathode busbar structure from electrical contact points adjacent to the cathode fingers without any significant voltage drop across the cathode busbar structure and with the most economical power consumption in the cathode busbar structure, said cathode busbar structure is attached in electrical contact to at least one sidewall of a cathode walled enclosure fabricated from a conductive metal and having sidewalls, said cathode walled enclosure therein contains a plurality of cathode fingers;

II. Said cathode fingers having a cathode finger structure which comprises a conductive metal cathode finger reinforcing means, lengths of highly conductive metal positioned in the cathode finger structure, and foraminous conductive metal means attached to the cathode finger reinforcing means thereby forming the exterior of the cathode finger structure and providing gas compartment space inside the cathode finger structure, said lengths of highly conductive metal are positioned in the cathode finger structure in such a configuration whereby the lengths of highly conductive metal are adapted to carry an electric current and to maintain a substantially uniform current density through the cathode fingers without any significant voltage drop across the cathode fingers and with the most economical power consumption in the cathode fingers, said cathode finger structure thus provides a structure for the cathode fingers, said cathode walled enclosure therein contains a plurality of cathode fingers which extend substantially across the interior of the cathode walled enclosure and the cathode fingers are attached in electrical contact to at least one interior sidewall of the cathode walled enclosure, said cathode busbar structure is attached in electrical contact to the exterior sidewall of the cathode walled enclosure on the sidewall adjacent to the attached cathode fingers;

III. Said anode base structure comprises a highly conductive metal means having a substantially flat and level surface and having a decreased cross-section as it extends away from the anode or intercell connecting busbar means to form the cross-sectional shape of a substantially stair-stepped truncated right triangle, said highly conductive metal means has such a configuration and different relative dimensions whereby it is adapted to carry an electric current and to maintain a substantially uniform current density through the anode base structure to electrical contact points adjacent to the anode blades without any significant voltage drop across the anode base structure and with the most economical power consumption in the anode base structure.

3,859,197

BIPOLAR ELECTRODES

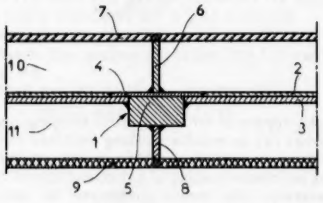
Pierre Bouy, Enghien-les-Bains, and Daniel Collard, Paris, both of France, assignors to Rhone-Progil, Paris, France

Filed Dec. 13, 1972, Ser. No. 314,728

Claims priority, application France, Dec. 21, 1971, 71.45861

Int. Cl. B01k *3/04*

U.S. Cl. 204—284 **9 Claims**



1. A bipolar electrode having an anodically active part comprising a film-forming metal covered with a conducting layer which is inert to electrolytes, and a cathodically active part comprising a metal which can be used cathodically, said anodically and cathodically active parts being apertured and separated in space, characterized in that the said anodically and cathodically active parts are mechanically and electrically joined by welding to a plurality of bonded members of elongated shape arranged parallel and along the height of the electrode, each of said bonded members comprising a sheet of a film-forming metal bonded to a piece of metal which can be used cathodically, said anodically active part being separated in space from said film-forming metal of said bonded members by means of a film-forming metal intermediary spacer member and said cathodically active part being separated in space from a metal which can be used cathodically of said bonded members by means of an intermediary spacer member of a metal which can be used cathodically, two adjacent of said

bonded members being joined by the agency of two metal sheet secured together, the first of these sheets being made of a film-forming metal welded to the sheet of a film-forming metal of the bonded members and the second of these sheets being made of a metal which can be used cathodically welded to the piece of a metal which can be used cathodically of the bonded members, the whole of the said bonded pieces and the said metal sheets forming a partition providing a hydraulic seal of anolyte and catholyte, said partition serves as an electrical conductor only over a small fraction of its surface.

3,859,198

COATING COMPOSITION SUITABLE FOR USE AT HIGH TEMPERATURES

Harold Garton Emblem, Bromley, and James Howarth-Williams, Pudey, both of England, assignors to Zirconal Processes Limited, Bromley, England

Filed Feb. 14, 1973, Ser. No. 332,507

Claims priority, application Great Britain, Feb. 15, 1972, 6991/72

Int. Cl. B01k *3/04*; **B44d** *1/20*

U.S. Cl. 204—290 R **13 Claims**

1. A method of forming on a carbon electrode a coating that is convertible to an aluminum based protective coating upon use of said electrode as an anode in the production of aluminum metal by electrolysis, comprising (1) applying to said carbon electrode a composition comprising finely divided particles of an oxide of aluminum dispersed in a binding solution therefor, said binding solution comprising at least one substance selected from the group consisting of aluminum hydroxychlorides, chlorohydrates and complexes thereof; aluminum phosphates and polyphosphates; aluminum acetates; aluminum alkoxides; and alkali metal aluminates and solutions prepared by dissolving precipitated hydrated aluminum oxides in an aqueous sodium hydroxide solution; and (2) drying the resulting coating.

3,859,199

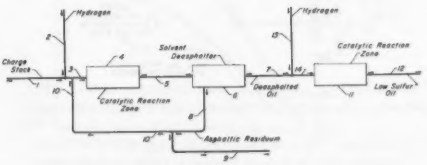
HYDRODESULFURIZATION OF ASPHALTENE-CONTAINING BLACK OIL

John G. Gatsis, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 5, 1973, Ser. No. 376,506

Int. Cl. C10g *37/06*

U.S. Cl. 208—97 **8 Claims**



1. A combination process for the desulfurization of a sulfurous, asphaltene-containing hydrocarbonaceous charge stock, of which at least about 10 percent boils above a temperature of 1,050°F., which process comprises the steps of:

a. contacting a mixture of said charge stock, hydrogen and at least a portion of the asphaltic residuum resulting from Step (c) in a first catalytic desulfurization reaction zone to partially convert the asphaltenes present in said charge stock;

b. deasphalting at least a portion of the resulting desulfurized product effluent in a deasphalting zone to provide a deasphalted oil, essentially free of asphaltenes, and an asphaltic residuum containing asphaltenes;

c. recycling at least a portion of said asphaltic residuum in admixture with said charge stock;

d. contacting said deasphalted oil and hydrogen in a second catalytic desulfurization reaction zone; and,

e. recovering a low sulfur hydrocarbonaceous oil.

3,859,200

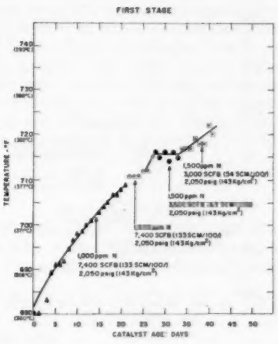
RESIDUAL OIL HYDRODESULFURIZATION PROCESS AT REDUCED HYDROGEN RATE WITH AMMONIA ADDITION

Louis W. Brunn; James A. Frayer; Franklin E. Massoth; John A. Paraskos, and Stephen J. Yanik, all of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 22, 1974, Ser. No. 434,585

Int. Cl. C10g *23/02*

U.S. Cl. 208—216 **12 Claims**



1. A process for the hydrodesulfurization of an asphaltene-containing oil comprising passing said oil and hydrogen at a rate of 3,000 to 20,000 standard cubic feet of hydrogen per barrel of feed oil over a sulfided catalyst comprising Group VI and Group VIII metals on alumina at a temperature between 600° and 900°F., adding ammonia to said catalyst in an amount to increase hydrodesulfurization in said process as compared to the absence of said ammonia, the ammonia concentration in the reactor gases being lower than the average hydrogen sulfide concentration in said gases, and compensating for catalyst deactivation due to catalyst aging, at least in part, by decreasing hydrogen flow rate to said process within said range to increase ammonia and hydrogen sulfide concentration in the reactor gases.

3,859,201

HYDROCARBON CONVERSION WITH A MULTIMETALLIC CATALYTIC COMPOSITE

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 233,819, March 10, 1972, Pat. No. 3,798,155. This application Feb. 4, 1974, Ser. No. 439,477

Int. Cl. C10g *35/09*, *13/10*; **C07c** *5/30*

U.S. Cl. 208—139 **16 Claims**

1. A process for converting a hydrocarbon charge stock which comprises contacting the hydrocarbon charge stock at hydrocarbon conversion conditions with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. percent platinum group metal, about 0.01 to about 2 wt. percent rhenium, about 0.1 to about 3.5 wt. percent halogen and bismuth in an amount sufficient to result in an atomic ratio of bismuth to platinum group metal of about 0.1:1 to about 1:1, wherein the platinum group metal, rhenium, and bismuth are uniformly dispersed throughout the porous carrier material and wherein substantially all of the platinum group metal, rhenium and

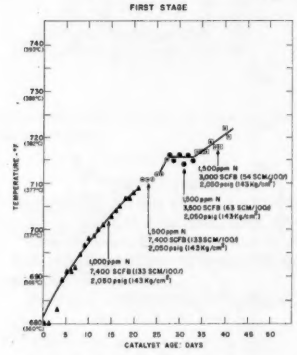
bismuth are present in the corresponding elemental metallic states.

DESULF

3,859,202
FIRST STAGE RESIDUAL OIL HYDRODESULFURIZATION WITH AMMONIA ADDITION

Louis W. Brunn; James A. Frayer, and John A. Paraskos, all of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 22, 1974, Ser. No. 434,586
Int. Cl. C10g *23/02*
U.S. Cl. 208—210 **14 Claims**



1. A process for the hydrodesulfurization of an asphaltene-containing feed oil in a first stage at a reaction temperature in the range 600° to 900°F. comprising contacting said feed oil and hydrogen with a sulfided catalyst comprising Group VI and Group VIII metals on alumina, adding ammonia to said catalyst in an amount to increase hydrodesulfurization in said process as compared to the absence of said ammonia, the concentration in the reaction gases being lower than the average hydrogen sulfide concentration in said gases, and incrementally increasing temperature within said temperature range to compensate for loss of catalyst activity due to catalyst aging, separating a gaseous fraction from said first stage effluent and passing and degassed liquid effluent and hydrogen into contact with a sulfided catalyst comprising Group VI and Group VIII metals on alumina in a second stage at said reaction temperature range to effect further removal of sulfur from said oil.

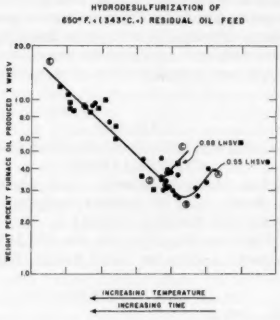
DESULF

3,859,203
REMOVAL OF SULFUR FROM RESIDUAL OIL WITH DOWNSTREAM AMMONIA ADDITION

Louis W. Brunn; James A. Frayer, and John A. Paraskos, all of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 22, 1974, Ser. No. 434,583
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **12 Claims**

1. A process for hydrodesulfurizing an asphaltene-containing oil comprising passing said oil and hydrogen downwardly at a temperature of 600° to 900°F. through a reactor containing a system of spaced-apart beds of sulfided catalyst comprising Group VI and Group VIII metals on alumina, introducing temperature quench hydrogen downstream in said catalyst bed system, adding ammonia to said catalyst in said beds at relatively upstream and relatively downstream positions in said reactor, said ammonia being added in amounts to increase hydrodesulfurization in said process as compared to the absence of said ammonia, the ammonia concentration in the reactor gases being lower than the average hydrogen sulfide concentration in said gases, and incrementally increas-



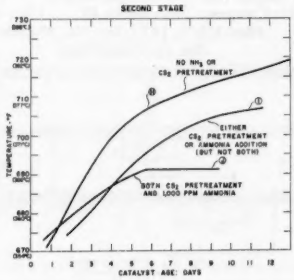
ing the temperature within said temperature range to compensate for loss of catalyst activity due to catalyst aging.

DESULF

3,859,204
RESIDUAL OIL HYDRODESULFURIZATION PROCESS BY CATALYST PRETREATMENT AND AMMONIA ADDITION

Louis W. Brunn; James A. Frayer; John A. Paraskos, and Stephen J. Yanik, all of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 22, 1974, Ser. No. 434,584
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **14 Claims**


SECOND STAGE
NO NH3 OR CS2 PRETREATMENT
EITHER CS2 PRETREATMENT OR AMMONIA ADDITION (BUT NOT BOTH)
BOTH CS2 PRETREATMENT AND 1000 PPM AMMONIA
TEMPERATURE °F
CATALYST AGE: DAYS

1. A process for the hydrodesulfurization of an asphaltene-containing oil at a reaction temperature in the range 600° to 900°F. wherein said oil and hydrogen are passed over a sulfided catalyst containing Group VI and Group VIII metals on alumina, said catalyst having been sulfided by an organic sulfur compound containing less than 8 carbon atoms in the absence of hydrogen, adding to said catalyst ammonia in an amount to increase hydrodesulfurization as compared to the absence of said ammonia, the ammonia concentration in the reaction gases being lower than the average hydrogen sulfide concentration in said gases, and incrementally increasing the temperature within said temperature range to compensate for loss of catalyst activity due to catalyst aging.

3,859,205

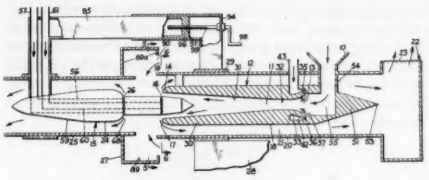
APPARATUS AND METHOD FOR TRANSPORTING FLUID-ENTRAINABLE PARTICLES

Imants Reba, and Edward C. Wolthausen, both of Vancouver, Wash., assignors to Crown Zellerback Corporation, San Francisco, Calif.

Continuation of Ser. No. 222,085, Jan. 31, 1972, abandoned. This application Apr. 17, 1974, Ser. No. 461,560

Int. Cl. B07b 7/02

U.S. Cl. 209—3 21 Claims



20. The method as set forth in claim 19 wherein the particles are a mixture of particles capable of developing different inertias and which includes penetrating the fluid curtain with particles capable of developing sufficient inertia to penetrate said fluid curtain and removing such penetrating particles, and entraining for movement with the fluid curtain particles which do not develop sufficient inertia to penetrate the fluid curtain.

3,859,206

STOCK CLEANER AND METHOD

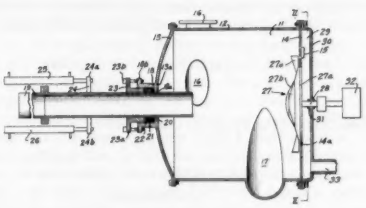
Jack Baggaley, Bury, England, assignor to Beloit Corporation, Beloit, Wis.

Filed Jan. 12, 1973, Ser. No. 323,250

Claims priority, application Great Britain, Jan. 28, 1972, 4082/72

Int. Cl. B03b 7/00

U.S. Cl. 209—17 10 Claims



1. In a stock separator unit comprising a tubular wall providing a stock centrifuge chamber having opposite spaced end walls:

a stock inlet opening tangentially through said tubular wall into said chamber adjacent to one of said end walls;

a tangential heavy impurities trap in the tubular wall adjacent to the opposite end wall and extending in the same direction of rotation as said inlet;

said opposite end wall having therein an annular perforate area spaced a limited distance from said tubular wall;

a rotary impeller concentric with said annular area and operating to impart rotary motion to stock within the chamber and assisting pulping of the stock;

a duct extending through said one wall concentric with the axis of rotation of the stock in the chamber for tapping off light impurities centrifuged toward the axis of rotation;

means providing a takeoff chamber to receive an annular stream of stock tapped off from the body of stock in the stock chamber through said annular perforate area;

and a stock outlet duct leading from the lower portion of said takeoff chamber.

3,859,207

FLOTATION OF ALUMINOSILICATE, PHOSPHATE AND FLUORIDE ORES

Louis C. Knocke, Shelby, N.C., and William Novis Smith, Jr., Chester, Pa., assignors to Foote Mineral Company, Exton, Pa.

Filed Feb. 28, 1973, Ser. No. 336,471

Int. Cl. B03d 1/02

U.S. Cl. 209—166 9 Claims

1. In a beneficiation process including froth flotation of ground ore to provide a mineral concentrate from an ore selected from the group consisting of aluminosilicate and alkali and alkaline earth metal aluminosilicate, phosphate and fluoride ores, the improvement consisting essentially of conditioning the ground ore prior to flotation with from about 0.25 to about 4 lbs. per ton of ore based on the ore being treated, of a fatty acid collecting aid said fatty acid being selected from the group consisting of a fatty acid containing 20 to 22 carbon atoms and a mixture of fatty acids containing from about 15 to about 75% of a fatty acid containing 20 to 22 carbon atoms, balance C_{18} or lower fatty acids, said percentage being by weight, based on the weight of the fatty acid mixture and from about 0.05 to about 1 lb. per ton of ore, based on the ore being treated of an alicyclic or aromatic hydrocarbon oil selected from the group consisting of turpentine, pinene, mesitylene, cedrene and 1,3-dicyclopentadiene.

3,859,208

FLOTATION OF LITHIUM ALUMINOSILICATE ORES

Louis C. Knocke, Shelby, N.C., and William Novis Smith, Jr., Chester, Pa., assignors to Foote Mineral Company, Exton, Pa.

Filed Feb. 28, 1973, Ser. No. 3[illegible]472

Int. Cl. B03d 1/02

U.S. Cl. 209—166 4 Claims

1. In a beneficiation process including froth flotation of ground lithium aluminosilicate ores to provide a lithium aluminosilicate mineral concentrate, the improvement consisting essentially of conditioning said ore prior to flotation with from about 0.25 to about 4 lbs. per ton of ore based on the ore being treated, of a collecting aid consisting essentially of a member selected from the group consisting of a fatty acid containing 20 to 22 carbon atoms and a mixture of fatty acids containing from about 15 to about 75% of a fatty acid containing 20 to 22 carbon atoms, balance C_{18} or lower fatty acids, said percentage being by weight, based on the weight of the fatty acid mixture.

3,859,209

SYSTEM FOR AND METHOD OF EXTRACT CONCENTRATION AND DIRECT INJECTION INTO A CHROMATOGRAPHIC INSTRUMENT

Vilhelm J. Jahnsen, Lake View Terrace; William G. Bloom, Manhattan Beach, and Charles F. Campen, Jr., Monrovia, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Aug. 14, 1973, Ser. No. 341,235

Int. Cl. B01d 15/06

U.S. Cl. 210—26 13 Claims

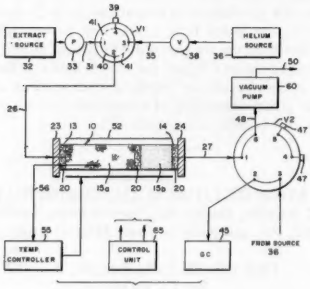
1. A method of handling an extract comprising liquid solvent means in which organic chemical compounds are dissolved to separate the compounds from the liquid solvent means which vaporizes at a temperature which is below the vaporization temperature of any of said compounds, the steps comprising:

providing a structure having first and second ends and packed with packing means between said ends, the packing means characterized by the property of being capable of attracting said compounds and being heatable to a first temperature at which said liquid solvent means vaporizes and below the vaporization temperature of any of said compounds and which is further heatable to a second temperature at which all of said compounds vaporize;

heating said packing means to said first temperature;

injecting said extract into said structure through one end thereof, whereby the liquid solvent means of said extract vaporizes and passes as vapors through said packing means and exits said structure through the other end thereof, with said packing means attracting the compounds which are separated from the solvent means as the latter vaporizes to prevent said compounds from exiting said structure together with said solvent means' vapors;

heating said packing means to said second temperature, whereby the compounds attracted to said packing means vaporize and thereby become separated therefrom;



providing a source of a flushing gas;

injecting said flushing gas from said source into said structure at least after said packing means is heated to said second temperature to flush out the vaporized compounds therefrom;

providing a gas chromatographic column; and

selectively directly supplying said flushing gas from said source to said column so as to pass therethrough except when said flushing gas is injected into said structure after said packing material is heated to said second temperature when said column is connected to said source through said structure, so that the flushing gas with the vaporized compounds pass from said structure directly to said column.

3,859,210

REMOVAL OF HEAVY METALS FROM AQUEOUS SOLUTIONS

Asa E. Hatch, 118 Post Oak, Lake Jackson, Tex. 77566

Filed July 19, 1971, Ser. No. 164,151

Int. Cl. C02b *1/14;* **C02c** *5/02*

U.S. Cl. 210—28 **7 Claims**

1. A process for removing mercury from aqueous streams having dissolved therein mercury in ionic or compound form comprising

1. contacting the aqueous stream with a polyelectrolyte selected from the group consisting of a polyalkylene polyamine and polyethylenimine and particulate matter selected from the group consisting of a bentonite clay and sand,
2. allowing the mercury to be bound to the particulate matter, and
3. separating the particulate matter containing the mercury from the aqueous stream.

3,859,211

WATER CLARIFICATION WITH NITROGEN-HETEROCYCLIC PHOSPHONIC ACIDS

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

Division of Ser. No. 768,509, Oct. 17, 1968, Pat. No. 3,674,804. This application Aug. 26, 1971, Ser. No. 175,316

Int. Cl. C02b *1/20*

U.S. Cl. 210—54 **15 Claims**

1. A process of water clarification comprising the step of adding to water containing suspended matter nitrogen-heterocyclic phosphonic acids and derivatives thereof characterized by at least one aminomethyl, or aminosubstituted methyl, phosphonic acid group or a derivative thereof, bonded directly, or indirectly through a N-side chain, to the nitrogen atom of the heterocyclic ring selected from the group consisting of an imidazoline, a tetrahydropyrimidine, a piperazine, a morpholine and

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3,859,212

FLOCCULATING AGENTS

Graham Smalley, Huddersfield; George McGrow, Mirfield, and Dennis Crowley, Leeds, all of England, assignors to Allied Colloids Manufacturing Company Limited, Yorkshire, England

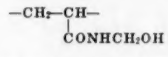
Filed Oct. 6, 1972, Ser. No. 295,754

Claims priority, application Great Britain, Oct. 12, 1971, 47487/71

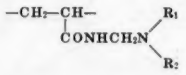
Int. Cl. B01d *21/01*

U.S. Cl. 210—54 **13 Claims**

1. A process for separating solids of an acidic suspension of solids in a liquid medium from the liquid medium by means of sedimentation, filtration or flotation, which comprises contacting said suspension with a water soluble copolymer having a molecular weight greater than 5,000,000 and active ingredients consisting essentially of methylolacrylamide units (A):



and aminomethylacrylamide units (B):



in which R_1 and R_2 which are C_{1-4} alkyl and C_{2-4} hydroxyalkyl, the molar ratio A:B being from 2:1 to 1:2.3.

3,859,213

FILTERING APPARATUS AND METHODS

Howard C. Hunt, Hollis, N.H., assignor to Improved Machinery, Inc., Nashua, N.H.

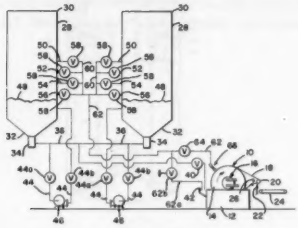
Filed Aug. 17, 1973, Ser. No. 389,366

Int. Cl. B01d *37/02*

U.S. Cl. 210—73 **5 Claims**

1. A method of filtering a brewery waste slurry including diatomaceous earth, comprising the steps of providing a rotary drum filter disposed in a vat and having an endless filtering web which is entrained around the drum of the filter to be longitudinally driven during the filter operation and also entrained around a roll spaced from such drum, separating the diatomaceous earth from an other component of the brewery waste slurry, sufficiently filling said vat with said separated diatomaceous earth that operation of the filter will cause a

covering of the diatomaceous earth to be accumulated on said longitudinally driven filtering web, operating said filter to cause a covering of said diatomaceous earth to be so accumulated on said filtering web, thereafter filtering said other component of the brewery waste slurry by normally continuously supplying said other component, independently of said diatomaceous earth in said vat, onto said acccumulated diatomaceous earth on said filtering web at least generally tangentially of said drum and in the direction of the driven movement of said filtering web through whistle-type shower means while continuing to operate the filter whereby said accumulated diatomaceous earth separates said supplied other component of the brewery waste slurry into a fraction passing through said diatomaceous earth and a fraction collected thereby, discharging said accumulated diatomaceous earth and its collected fraction from said filtering web, and throughout said filtering of said other component of said brewery waste slurry normally maintaining said vat sufficiently filled with said diatomaceous earth whereby said diatomaceous earth is normally continuously accumulated on said filtering web intermediate said discharge and said supplying of said other component of the brewery waste slurry.



5. Apparatus for filtering a brewery waste slurry, comprising a vat, a rotary drum filter disposed in said vat, said rotary drum filter including a filter drum located to be partially submerged in material in said vat and also including a roll spaced from said drum, said rotary drum filter further including an endless filtering web entrained around said drum and said roll to be longitudinally driven during the filter operation, at least one settling tank for containing a brewery waste slurry including diatomaceous earth and operable for separating such diatomaceous earth by settling from an other portion of the slurry, first conduit means connecting said settling tank with said vat for supplying the settled diatomaceous earth from said settling tank to said vat and for normally maintaining said vat sufficiently filled with the diatomaceous earth that operation of said rotary drum filter will cause a covering thereof to be normally continuously accumulated on successive portions of said filtering web, whistle-type shower means operatively associated with said filtering web for discharging material thereon at least generally tangentially of said filter drum and in the direction of the driven movement of said filtering web, second conduit means connecting said settling tank with said whistle-type shower means for supplying said other component of the brewery waste slurry to said shower means such that the latter supplies such component onto successive portions of said filtering means and to accumulated diatomaceous earth thereon independently of said vat, whereby such accumulated diatomaceous earth separates such supplied component into a fraction passing through the accumulated diatomaceous earth and a fraction collected thereby, said second conduit means further comprising a plurality of conduits connected to said settling tank for discharging said other component from different elevations, valve means for permitting alternative employment of said conduits, discharge means operatively associated with said filtering web for discharging accumulated diatomaceous earth and its said collected fraction from successive portions of said filtering web prior to re-accumulation of diatomaceous earth on such portions of said filtering web, and shower means operatively associated with said filtering web for cleaning said filtering web intermediate said discharge means and said re-accumulation of diatomaceous earth on said filtering web.

3,859,214

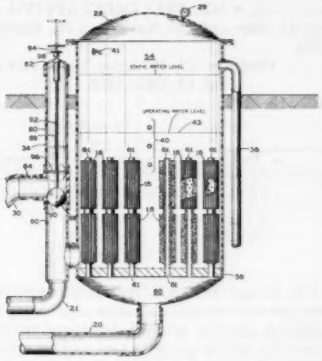
FILTRATION APPARATUS

Robert S. Lang, and Robert L. Carnot, both of Tampa, Fla., assignors to L. F. Lang & Son Pools, Inc., Tampa, Fla.

Filed Mar. 13, 1973, Ser. No. 340,671

Int. Cl. E04h *3/16*

U.S. Cl. 210—169 **4 Claims**



1. In a filtration apparatus for a below grade swimming pool in which water from the pool is sucked under partial vacuum by a pump through a filter medium and returned to the pool, the improvements comprising in combination:

a below grade filter tank having horizontal plate means therein dividing its interior into an upper chamber above said plate means and a lower chamber below said plate means, said plate means having a plurality of apertures therein;

at least one water line means extending from the pool to said upper chamber for supplying water from the pool to said upper chamber by gravity flow and for maintaining a static water level in said upper chamber at the water level in the pool;

a plurality of apertured pipes having lower portions supported by said plate means in alignment respectively with said apertures of said plate means, said pipes extending vertically up from said plate means into said upper chamber for receiving filter cartridges therein and opening at said lower portions into said lower chamber for discharging filtered water into said lower chamber;

porous, cylindrical, hollow filter cartridges mounted respectively on the outside of said pipes in said upper chamber, with said pipes received in the hollow interiors of said cartridges and each cartridge being removable upwardly in the upper chamber from the corresponding pipe;

a removable lid for said tank providing access to said filter cartridges in said upper chamber for cleaning and replacement thereof;

a waste line draining from a portion of said upper chamber in said tank immediately above said horizontal plate means and below said filter cartridges for removing water from said upper chamber without passing through said filter cartridges to expose said filter cartridges for cleaning thereof in said tank;

a return line leading from said lower chamber of said tank back to the pool;

and a pump means in said return line for drawing water from said upper chamber through said filter cartridges from outside to inside thereof under partial vacuum and into and down through said apertured pipes and down

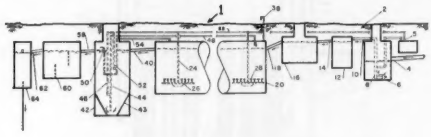
through said lower chamber of said tank back to the pool for filtering the water with contaminants being deposited on the outside of said filter cartridges from which the contaminants may be removed by cleaning said cartridges in said upper chamber after removing water therefrom and removing said lid;

said pump means also being connected to said waste line and arranged to pump waste water and contaminants through said waste line from the tank above said plate means external to said filter cartridges to a drain.

3,859,215
SEWAGE TREATMENT SYSTEM

George A. Milne, 44-116 Kavinohea Pl., Kaneohe, Hawaii 96744

Filed Apr. 21, 1972, Ser. No. 246,253
Int. Cl. C02c *1/08, 1/12*
U.S. Cl. 210—170 **9 Claims**



1. The sewage treatment apparatus comprising a closed ambient pressure operating aeration tank having a cylindrical wall oriented around a generally horizontal axis for maintaining rotary flow of sewage in the tank and for supporting overlying material and having ends joining the wall in completion of a closed chamber, the aeration tank further having restricted openings receiving a sewage inflow pipe, an effluent outflow pipe, a solids return pipe, an oxygen input pipe and an open atmospheric vent pipe, wherein the aeration tank cylindrical wall is disposed underground and is completely covered by a usable recreation surface, and wherein all of the aeration tank openings are disposed underground, wherein the atmospheric vent pipe, sewage inflow pipe and effluent outflow pipe are open to atmospheric pressure and the tank is open to atmospheric pressure and wherein the cylndrical wall of the tank supports overlying ground and maintains rotary motion of sewage within the tank, and an underground clarifier connected to the distal end of the outflow pipe spaced from the aeration tank, the outflow pipe discharging into the clarifier, the solids return pipe connected to the clarifier and extending from the clarifier to the aeration tank.

3,859,216
FILTER ASSEMBLY

Ronald L. Sisson, Jackson; Donald E. Holmes, Clark Lake, and Burton S. Zeller, Parma, all of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 3, 1973, Ser. No. 421,205
Int. Cl. B01d *27/00*
U.S. Cl. 210—440 **11 Claims**

1. In combination, a screw-on throwaway-type fluid filter assembly having a cylindrical filter bowl open at one end, as well as an annular filter element operatively mounted in the bowl, and a filter mounting means, said filter assembly being adapted to be screwed onto said filter mounting means, said filter mounting means comprising a filter head having:

a. fluid inlet and fluid outflow passages provided therein;

b. one said passage terminating at its relatively inner end in a first passage portion which opens and extends into the bowl interior on the bowl axis and into sealing relationship relative to the inner surface of said annular filter element;

c. the other said passage terminating at its relatively inner end in a second passage portion which also opens into the bowl interior but is disposed radially-outwardly from said bowl axis;

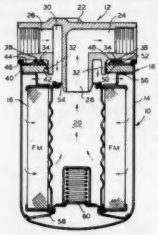
d. said second said portion including an annular externally threaded portion coaxial with siad first passage portion, which threaded portion extends into the bowl interior for a predetermined distance so as to permit communication between said other passage and the outer surface of said annular filter element;

e. said filter element being mounted in the normal path of fluid flow between said fluid passages; and

f. an annular sealing surface radially outwardly from said threaded second passage portion;

said filter assembly further including:

a. a rigid base plate closing off the open end of said filter bowl;



b. said base plate having a central threaded opening for screwing said filter assembly onto said filter head threaded second passage portion;

c. a cover plate secured to the outer surface of said base plate;

d. said cover plate being provided with circular, radially spaced, outwardly-projecting ribs disposed radially close to said central threaded opening for holding an annular resilient gasket sealing means therebetween;

e. said sealing means having an axial dimension greater than the axial depth of said ribs so as to permit sealing communication between said filter assembly and said filter head sealing surface.

3,859,217
APPARATUS FOR SEPARATING HIGH FROM LOW VISCOSITY FLUIDS

Robert D. Holstead, Springfield, and Charles E. Wyman, Hampden, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 15, 1973, Ser. No. 323,470
Int. Cl. B01d *57/00, 11/00*
U.S. Cl. 210—523 **4 Claims**

1. Apparatus for gravitationally separating a relatively high viscosity material mixed with a separate phase of a relatively low viscosity fluid material, said apparatus comprising:

A. a generally cyclindrical vessel adapted for orientation with the axis thereof generally vertical when said apparatus is operating, said vessel having as so oriented a first port means defined in an upper portion thereof, a second port means defined in a lower portion thereof, and a third port means defined in a middle portion thereof, the interior length of said vessel being substantially greater than the interior diameter thereof,

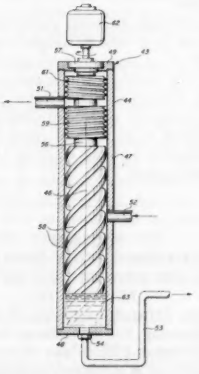
B. lifting screw means having an axial shaft portion and an integral, peripheral, helically extending, radially projecting, generally continuous blade portion, said screw means being generally coaxial with said vessel and having said blade portion radially terminate in adjacent, spaced relationship to the inner walls of said vessel, said blade portion defining in combination with said vessel and said shaft portion a circumferentially extending envelope region within said vessel between said vessel and said shaft portion,

C. journal means, including bearing means and sealing means at opposed end regions of said vessel and adapting said screw means for rotational movements within said vessel,

D. a powerhead functionally interconnected with said screw means and adapted to rotatably drive same in a direction such that said blade portion conveys upwardly during operation of said apparatus, and

E. conveyance means, including conduit means functionally interconnected with said vessel and adapted to input into said vessel through said third port means a mixture of said high viscosity material and said fluid material to output from said first port means said high viscosity material, and to output from said second port means said fluid material, during operation of said apparatus,

F. fluid transfer regulation means functionally interconnected with said second port means and adapted to maintain said fluid in said vessel during operation of said



apparatus within a predetermined level range in said lower portion of said vessel; said fluid transfer regulation means including:

B. flow means to permit escape from said second port means of said fluid at a rate not greater than the rate said fluid enters said vessel at said third port means depending upon the degree of separation of the two fluids, and

B. pressurization means to maintain said fluid in lower portion of said vessel at an adjustable level above said second port means to achieve efficient separation,

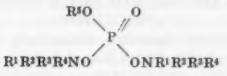
G. the relationship between said vessel, said screw means, said port means, and said powerhead being such that, during operation of said apparatus, said high viscosity material being output from said first port means by viscous drag forces generated in said envelope region and said low viscosity fluid being output from said port means by gravity forces when both of said fluids are input into said vessel through said third port means.

3,859,218
LUBRICATING OIL COMPOSITIONS

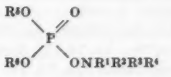
Graham James Jervis, Abingdon, and Robert Robson, Wantage, both of England, assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Nov. 15, 1972, Ser. No. 306,850
Claims priority, application Great Britain, Nov. 24, 1971, 54577/71
Int. Cl. C10m *3/38*
U.S. Cl. 252—32.5 **7 Claims**

1. A lubricating oil composition comprising a lubricating oil to which has been added from 0.001 to 10 percent by weight, based on the lubricating oil, of a mixture of about equal molar proportions of (a) a quaternary hydrocarbyl ammonium salt of mono (C_1–C_4) alkyl dihydrogen phosphate of the formula



and (b) a quaternary hydrocarbyl ammonium salt of di-(C_1–C_4) alkyl hydrogen phosphate of the formula



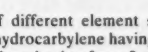
where R^1, R^2, R^3 and R^4 are similar or dissimilar hydrocarbon groups, R^1, R^2, R^3 and R^4 containing a total of at least 10 carbon atoms, and R^5 and R^6 similar or dissimilar are C_1–C_4 alkyl groups, said lubricating oil consisting essentially of polyester of a polyhydric alcohol selected from the class consisting of pentaerythritol, dipentaerythritol and mixtures of pentaerythritol and dipentaerythritol with a monocarboxylic acid or mixed monocarboxylic acids of from 4 to 10 carbon atoms.

3,859,219
BISPHOSPHORAMIDE-SULFUR COMPOUND CONTAINING LUBRICANT

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 17, 1972, Ser. No. 307,732The portion of the term of this patent subsequent to Jan. 15, 1974, has been disclaimed.
Int. Cl. C10m *1/48*
U.S. Cl. 252—42.7 **11 Claims**

1. A concentrate comprising (a) from 50 to 98 weight percent of an oleophilic organic sulfur compound or mixture thereof containing from 3 to 40 weight percent sulfur and selected from the group consisting of sulfurized esters, sulfurized terpenes, sulfurized olefins, aromatic sulfides, alkyl sulfides, amido-substituted dithiazole-thiones, sulfurized hydroxy esters, polyalkylphenol sulfides and sulfurized alkaline earth metal phenates, (b) from 1 to 20 weight percent of a bisphosphoramide prepared by contacting within a liquid phase reaction medium (1) phosphorus oxychloride (2) a difunctional compound having the structure:



wherein X is the same of different element selected from nitrogen or oxygen, R is a hydrocarbylene having from 2 to 18 carbons or a dihydrocarbylene having from 2 to 18 carbons; *m* is an integer equal to 1 when X is nitrogen and 0 when X is oxygen; R_2 is (a) the same or different hydrocarbyl having from 1 to 24 carbons or (b) a hydrocarbylene having from 1 to 18 carbons with one end of each R_2 hydrocarbylene bonding to the other R_2 hydrocarbylene or to said R when R is a dihydrocarbylene; and (3) a monofunctional compound having the formula:

$(R_1)_n$ Y H

wherein Y is the same of different element selected from (i) oxygen, sulfur or nitrogen when X is nitrogen or (ii) nitrogen when both X's are oxygen; *n* is an integer equal to 1 when Y is oxygen or sulfur and 2 when Y is nitrogen; and R_1 is the same or different constitutent selected from (i) hydrogen when Y is nitrogen or (ii) a hydrocarbyl; said contacting being conducted at a temperature of about 20° to 150°C and at a pressure sufficient to maintain a liquid reaction medium, and (c) from 0 to 45 weight percent of a diluent oil.

3,859,220

COPOLYMERS OF ETHYLENE WITH VINYL MONOMERS, METHODS OF THEIR PRODUCTION AND APPLICATION

Sergei Mikhailovich Samoilov, Simonovsky val, 8. kv. 60; Nikolai Alfredovich Plate, Novoslobodskaya ulitsa, 67/69, kv. 93; Vadim Vasilievich Maltsev, ulitsa Matveevskaya, 10, korpus 2, kv. 169; Viktor Nikolaevich Monastyrsky, ulitsa Vasilievskaya, 9, kv. 62, all of Moscow, U.S.S.R., and Valentin Alexeevich Kargin, deceased, late of ulitsa Arkadia Gaidara, 7, kv. 4, Moscow, U.S.S.R. (by Kaleria Petrovna Velichko, heiress)

Continuation of Ser. No. 216,293, Jan. 7, 1972, abandoned, which is a division of Ser. No. 74,525, Sept. 22, 1970, Pat. No. 3,804,816. This application Jan. 14, 1974, Ser. No. 432,828

Int. Cl. C10m *1/54*

U.S. Cl. 252—49.7 **1 Claim**

1. A lubricant composition which comprises a major amount of a lubricating oil and an ethylene-vinyltin copolymer in amount sufficient to impart antiwear properties, said copolymer containing a molar ratio of ethylene to vinyltin of 20–98:80–2 and said vinyltin having the formula $CH_2{=}CH{-}Sn\,R_1R_2R_3$ where R_1, R_2 and R_3 are radicals selected from the group consisting of alkyl containing one to six carbon atoms and phenyl.

3,859,221

LUBRICANT COMPOSITIONS EXHIBITING SYNERGISTIC RELIEF OF METAL FATIGUE

Conrad J. Polk, Cranbury, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed , Ser. No. 353,179

Int. Cl. C10m *1/32*

U.S. Cl. 252—51.5 A **10 Claims**

1. A lubricant composition comprising a major proportion of a liquid hydrocarbon oil selected from the group consisting of mineral oils, synthetic oils and greases thereof, containing, in an amount sufficient to improve metal fatigue, a synergistic mixture of (a) isopropylaminoethanol and b an alkenyl succinimide of an alkenyl succinic anhydride and a polyethylene amine, in a mol ratio of about 2:1 and in a mol ratio of (a) to (b) from about 1:4 to about 4:1.

3,859,222

SILICON NITRIDE-SILICON OXIDE ETCHANT

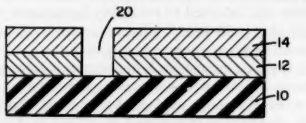
Anthony S. Squillace, Cypress; Albert E. Martin, Lynwood, and Jerald J. Rudmann, Anaheim, all of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Division of Ser. No. 163,630, July 19, 1971, Pat. No. 3,811,974. This application Dec. 17, 1973, Ser. No. 425,473

Int. Cl. C09k *3/00*

U.S. Cl. 252—79.3 **3 Claims**

1. A substantially non-aqueous etchant composition for etching adjacent oxide and nitride layers of a semiconductor material at a controlled rate, said composition consisting of about 1 to 6 parts by weight of fluoborate anion (BF_4^-) containing material and about 100 parts by weight of phosphoric



acid (H_3PO_4), said composition having an operating temperature range between 100°C and 110°C.

3,859,223

STABLE DRY CLEANING BLEACH COMPOSITION

Harry Marcus Castrantas, Trenton, N.J., and Robert Ellsworth Keay, State College, Pa., assignors to FMC Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 57,812, July 23, 1970, abandoned. This application May 26, 1972, Ser. No. 257,171

Int. Cl. C11d *7/54*

U.S. Cl. 252—104 **4 Claims**

1. A chemically and physically stable emulsion consisting essentially of from 25 to 50% by weight of perchloroethylene, from 20 to 40% of an aqueous hydrogen peroxide of 25 to 70% concentration stabilized with a stannate against decomposition due to dilution with tap water containing metallic impurities, and an anionic surfactant soluble in the perchloroethylene and which is both a detergent and emulsifier for water-in-oil systems in amounts of 75 to 150% of the weight of the perchloroethylene.

3,859,224

DETERGENT COMPOSITION CONTAINING, AS A BUILDER, THE SODIUM SALT OF GLYCEROL TRICITRATE

Joachim Kandler, Erftstadt-Lechenich; Karl Merkenich, Efferen; Klaus Henning, Hurth; Wilhelm Vogt, Efferen; Eberhard Auer, Erftstadt-Liblar, and Hermann Glaser, Erftstadt-Lechenich, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Sept. 21, 1972, Ser. No. 291,044

Claims priority, application Germany, Sept. 24, 1971, 2147778

Int. Cl. C01d *3/06*

U.S. Cl. 252—135 **4 Claims**

1. A detergent composition comprising an ionic or nonionic surface active agent and, as a builder, the sodium salt of glycerol tricitrate.

3,859,225

DRYCLEANING DETERGENT COMPOSITION

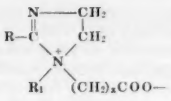
Eugene Audrey McKnight, and Clyde Davis Kishbaugh, both of Stamford, Conn., assignors to Stamford Chemical Industries, Inc., Cincinnati, Ohio

Continuation of Ser. No. 745,683, July 18, 1968, abandoned. This application Sept. 7, 1971, Ser. No. 178,409

Int. Cl. C11d *1/84, 3/30;* **D06l** *1/04*

U.S. Cl. 252—153 **4 Claims**

1. A dry cleaning detergent composition for dry cleaning soiled garments which are agitated in a hydrocarbon dry cleaning solvent consisting essentially of an anionic detergent, a betaine as a garment softening agent selected from the group consisting of imidazoline betaines having the structural formula:



wherein

R is a hydrocarbyl radical containing from 8 to 21 carbon atoms, and R_1 is a lower alkyl or hydroxyalkyl radical and x is 2 or 3,

N-dodecyl pyridinyl acetic acid,

N-hexadecylpiperidinopropionic acid,

N-dodecyl-N, N-bis-β-hydroxyethylaminoacetic acid,

N-octadecyl-N-β-hydroxyethyl-N-carboxymethylaminoacetic acid,

N-hexadecyl-N, N-bis-carboxymethylaminopropionic acid,

N-dodecyl-N-β,α-bis-hydroxypropyl-N-carboxylpropylaminoacetic acid,

N-heptadecyl-N, N-hydroethoxyethyl-N-carboxymethylaminoacetic acid,

N-decyl-N-β-hydroxyethyl-N-methyl-α-aminosuccinic acid,

N-heptadecyl-N, n-bis-hydroxyethylaminoacetic acid,

N-dodecylphenyl-N, N-bis-hydroxyethylaminopropionic acid,

N-bis-dodecyl-N-β-hydroxyethylaminoacetic acid,

Dodecyl-oxypropyl-dimethyl aminoacetic acid,

and mixed C_{12} to C_{18} alkoxyethyl-dimethyl aminopropionic acid,

and a humectant as a garment anti-static agent selected from the group consisting of (a) a mineral acid salt selected from the group consisting of mono-, di- and tri-ethanolamine salts of hydrochloric acid, phosphoric acid, sulfuric acid and mixtures thereof and (b) a water soluble salt of an organic acid selected from the group consisting of mono-, di- and tri-ethanolamine salts of acetic acid, propionic acid, formic acid and mixtures thereof, wherein said detergent is present in an amount of about 25% to about 75% by total weight of said ingredients and the remaining amount of said ingredients being constituted by said garment softening agent and said anti-static agent in a ratio in the range of about 1:9 to about 9:1.

3,859,226

SECONDARY ION MASS SPECTROSCOPY

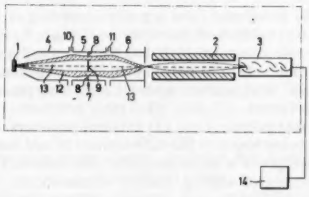
Helmut Schillalies, Rondorf, Germany, assignor to Leybold-Heraeus-Verwaltung G.m.b.H., Koln(Bayental), Germany

Filed Nov. 12, 1973, Ser. No. 414,768

Claims priority, application Germany, Nov. 11, 1972, 2255302

Int. Cl. H01j *37/26*

U.S. Cl. 250—282 **8 Claims**



1. In a secondary ion mass spectroscopy apparatus composed of a probe from which the ions to be measured emanate, a quadrupole mass analyzer presenting an entrance plane for the ions, and a secondary electron multiplier for receiving the ions to be measured, the improvement comprising baffle means disposed between said probe and said entrance plane of said quadrupole mass analyzer for blocking direct line-of-sight communication therebetween.

3,859,227

STABLE SLOW-SETTING CATIONIC BITUMINOUS EMULSIONS AND THEIR PREPARATION

Donald J. Dwyer, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 776,313, Nov. 14, 1968, abandoned, which is a continuation of Ser. No. 515,173, Dec. 20, 1965, abandoned. This application Aug. 24, 1972, Ser. No. 283,463

Int. Cl. B01j *13/00*; C09d *3/24*

U.S. Cl. 252—311.5 **13 Claims**

1. A cationic slow-setting bituminous emulsion having water as the continuous phase comprising from about 50 to less than 80 weight per cent of a bituminous material having a penetration in the range of about 40 to 300, at least about 0.05 weight per cent of the total emulsion of a cationic emulsifier which is an ethylene or propylene diamine substituted with an aliphatic hydrocarbon group of from 12 to 30 carbon atoms, from about 0.2 to 1 weight per cent of an alkylphenylpolyoxyalkylenealkanol nonionic emulsifier having at least 75 weight per cent alkyleneoxy alkanol, and wherein said alkyl group is of from about 6 to 20 carbon atoms, from about 0.1 to 3 weight per cent of a lignosulfonate salt and the remainder water, wherein the pH is in the range of 1 to 5.5.

3,859,228

METHOD OF MICROCAPSULE PREPARATION

Masataka Morishita; Yoshihito Inaba; Sadami Kobari; Mitsuru Fukushima, and Jinnosuke Abe, all of Shizuoka, Japan, assignors to Toyo Jozo Co., Ltd., Tagatagun, Shizuoka and Fuji Photo Film Co., Ltd., Kanagawa, both of, Japan

Filed July 31, 1972, Ser. No. 276,309

Claims priority, application Japan, July 30, 1971, 46-57746

Int. Cl. B01j *13/02*; B44d *1/02*

U.S. Cl. 252—316 **12 Claims**

1. A process for preparing microcapsules, which comprises:

1. dissolving a polymer for the capsule's wall-film selected from the group consisting of cellulose acetate, hydroxypropyl methyl cellulose, hydroxy propyl methyl cellulose phthalate, cellulose acetate dibutylamino hydroxypropyl ether, cellulose acetate phthalate, hydroxyethyl cellulose, hydroxy propyl cellulose, benzyl cellulose, benzyl aminomethyl cellulose, diethylamino cellulose, polyacrylic acid ester, polymethacrylic acid ester, methylacrylatemethacrylic acid copolymer, polyvinyl acetal diethylamino acetate, 2-methyl-5-vinylpyridine-methacrylate-methacrylic acid copolymer and vinylethylamino-vinyl acetate copolymer in a solvent having a dielectric constant of from 10 to 40,

2. emulsifying the solution so produced in a vehicle which is a liquid paraffin or a silicone oil, said vehicle and said solvent being poorly miscible with one another,

3. dispersing into the emulsion so produced with stirring a core substance have a particle size of from 100 to 1,500μ and being soluble in said solvent, and

4. evaporating said solvent.

3,859,229

PRODUCTION OF PRESSURE-RUPTURABLE HYDROPHILIC-WALLED MICROCAPSULES HAVING WATER-SOLUBLE COLOR-FORMING REACTANT MATERIAL IN SOLUTION IN THE CORE

Bruce W. Brockett, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

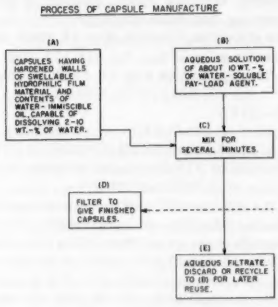
Division of Ser. No. 159,312, July 2, 1971,. This application Dec. 11, 1972, Ser. No. 314,205

Int. Cl. B01j *13/02*

U.S. Cl. 252—316 **5 Claims**

1. A process of making pressure-rupturable hydrophilic-walled microcapsules en masse which include water-soluble color-forming reactant material in solution in the internal

phase droplets of said microcapsules comprising the steps of 1. preparing microcapsules having water-swollen, organic, hydrophilic, polymeric film material walls and an internal phase comprising droplets of oil, said oil being water-immiscible but capable of dissolving about 1–10% by weight of water, and


PROCESS OF CAPSULE MANUFACTURE
(A)
CAPSULES HAVING HARDENED WALLS OF SWELLABLE HYDROPHILIC FILM MATERIAL AND CONTENTS OF WATER-IMMISCIBLE OIL, CAPABLE OF DISSOLVING 2-10 WT.-% OF WATER.
(B)
AQUEOUS SOLUTION OF ABOUT 10 WT.-% OF WATER-SOLUBLE PAY-LOAD AGENT.
(C)
MIX FOR SEVERAL MINUTES.
(D)
FILTER TO GIVE FINISHED CAPSULES.
(E)
AQUEOUS FILTRATE, DISCARD OR RECYCLE TO (B) FOR LATER REUSE.

2. modifying the thus-prepared capsules by bringing said microcapsules witn waterswollen walls into contact with an aqueous solution of said water-soluble color-forming reactant material.

3,859,230
SYNTHESIS GAS GENERATION WITH CARBON DIOXIDE SUPPLEMENTED FEED

James M. Moe, Manhattan Beach, Calif., assignor to Fluor Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 869,051, Oct. 24, 1969, abandoned. This application Jan. 15, 1973, Ser. No. 323,853
Int. Cl. C01g *1/02, 1/20, 35/00*
U.S. Cl. 252—373 **1 Claim**

1. In a process for the production of synthesis gas comprising a first reforming stage fed with naptha feedstock and steam to produce a gaseous mixture effluent comprising hydrogen, carbon monoxide, carbon dioxide, methane, and steam and a second reforming stage fed by first stage effluent; the improvement which consists of dividing said first stage effluent into major and minor portions, the minor portion being about 15 to 30 volume percent of the total effluent, separating carbon dioxide from said minor portion, combining the separated carbon dioxide with said major effluent portion and passing the resulting combined stream as feed to the second reforming stage thereby increasing the carbon monoxide content relative to hydrogen in the synthesis gas product.

3,859,231
SIMPLIFIED PROCESS FOR MANUFACTURE OF CATALYST COMPONENT

Rajindar K. Kochhar; Myron D. Osborn, both of Overland Park, and Robert J. Rowatt, Lake Quivira, all of Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 13, 1972, Ser. No. 297,536
Int. Cl. B01j *11/84*
U.S. Cl. 252—429 R **10 Claims**

1. A process for the manufacture of a polymerization catalyst component which consists essentially of contacting a magnesium compound with titanium tetrachloride in an inert hydrocarbon medium with the further provision that either (a) the magnesium compound is contacted with a 1–10 carbon alkanol in said hydrocarbon medium before the titanium tetrachloride is added to the reaction medium, or (b) the magnesium compound and titanium tetrachloride are reacted together in the hydrocarbon medium and then contacted with a 1–10 carbon alkanol in said hydrocarbon medium after being formed; said contacting steps being carried out at a temperature in the range of 15°–60°C.; said magnesium compound being selected from the group consisting of magnesium chloride and magnesium hydroxychloride; the magnesium compound being employed in a ratio of 0.05 to 20 mols per mol of titanium tetrachloride; and the alkanol being employed in a ratio of 0.05 to 20 mols per mol of titanium tetrachloride plus the magnesium compound.

3,859,232
SEMICONDUCTING METAL OXIDES WITH THE CUBIC $KSbO_3$ CRYSTAL STRUCTURE

Robert Joseph Bouchard, 2412 Shellpot Dr., and Arthur William Sleight, 406 Nichols Ave., both of Wilmington, Del. 19803

Filed Dec. 18, 1972, Ser. No. 316,267
Int. Cl. H01b *1/08, 3/10*
U.S. Cl. 252—519 **12 Claims**

1. A semiconducting metal oxide of cubic $KSbO_3$ crystal structure having the formula

$$Bi_{3-x}M_xM^1{}_{1+y}M^2{}_{2-y}O_{11}$$

wherein

M is a rare earth of atomic number 57–71 inclusive;

M^1 is aluminum, gallium, iron, rhodium or ruthenium;

M^2 is antimony or tellurium;

x is a number in the range 0 to about 1.5;

y is a number in the range 0 to 1;

with the provisos that

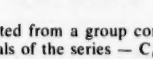
1. $y = 0$ when M^1 is aluminum, gallium, iron or rhodium and M^2 is antimony;
2. $y = \frac{2}{3}$ when M^1 is aliminum, gallium, iron or rhodium and M^2 is tellurium; and
3. $y = 1$ when M^1 is ruthenium and M^2 is antimony.

3,859,233
GROUT COMPOSITION

John P. Barker, Souderton, Pa., assignor to American Olean Tile Company, Lansdale, Pa.

Division of Ser. No. 49,581, June 24, 1970, abandoned. This application Aug. 17, 1972, Ser. No. 281,312
Int. Cl. C08f *45/08*
U.S. Cl. 260—17 R **6 Claims**

1. The grout composition consisting essentially of: 4–20 parts by weight of an aqueous thermoplastic resin latex containing a polymer selected from the class consisting of (1) polymers of one or more monomers, each of which has the structural formula



wherein R_1 is selected from a group consisting of hydrogen and the alkyl radicals of the series $-C_nH_{2n}1$, R_2 is selected from the same group, not including hydrogen and n is a whole number from 1–18, (2) polyvinyl acetate polymers, (3) copolymers of vinyl acetate with dibutyl fumarate, (4) vinyl chloride polymers, (5) vinyl alkyl ether polymers, (6) vinylidene chloride polymers and (7) ethylene polymers, said parts by weight being based on the resin content of said latex; 20–60 parts by weight of a white inorganic filler selected from the class consisting of whiting, calcium mono-silicate, flint, alumina, talc, pyrophylite and aluminum silicate; up to 25 parts by weight of a finely divided clay having a particle size from about 2–20 microns; and a viscosity increasing effective amount of a thickener selected from the class consisting of methyl cellulose and hydroxyethyl cellulose, said thermoplastic resin comprising at most 20 percent by weight of said composition with said white inorganic filler being the principal component of said composition.

3,859,234
FABRIC BONDING IMPROVEMENT

Dwight E. Peerman, Minneapolis, Minn., assignor to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Sept. 25, 1970, Ser. No. 75,746
Int. Cl. C08g *51/60*
U.S. Cl. 260—18 N **13 Claims**

1. An adhesive adapted for bonding cleanable fabrics comprising a polymeric fat acid copolyamide having a ball and ring softening point greater than 135°C. and an inherent viscosity of at least 0.5, said copolyamide being the thermal amidification product at a temperature of 100°–300°C. for a time sufficient to effect amidification, of (1) an acid component comprising: a mixture of:

a. about 40 to 70 carboxyl equivalent percent of a polymeric fat acid having, as determined by gas-liquid chromatography, a dimeric fat acid content greater than 86% by weight and having been prepared by polymerizing ethylenically unsaturated monocarboxylic acids of 16 to 22 carbon atoms; and

b. about 60 to 30 carboxyl equivalent percent of a copolymerizing dicarboxylic acid of the formula HOOC-R-COOH where R is a aliphatic hydrocarbon radical having 6–12 carbon atoms;

with essentially an amine equivalent amount of (2) an amine component comprising a mixture of:

c. about 30 to 70 amine equivalent percent of hexamethylene diamine; and

d. about 70 to 30 amine equivalent percent of a second diamine selected from the group consisting of xylylene diamine and isophorone diamine.

3,859,235
MODIFIED ALKYD RESIN COMPOSITIONS FOR PAINTS AND VARNISHES COMPRISING OXALIC ACID

Silvio Vargiu; Beppino Passalenti, both of Milan; Edoardo Carpaneti, Genova, all of Italy, and Societa Italiana Resine S.I.R. S.p.A., 03, Milan, Italy

Filed Oct. 25, 1972, Ser. No. 300,693
Claims priority, application Italy, Dec. 27, 1971, 32953/71
Int. Cl. C09d *3/64, 3/80*
U.S. Cl. 260—22 CB **5 Claims**

1. Composition for paints and varnishes comprising

1. an alkyd resin modified with an acrylic monomer which is a methyl, ethyl or butyl ester of acrylic or methacrylic acid in an amount ranging from 20 to 100 parts by weight per 100 parts by weight of resin, said alkyd resin comprising the reaction product of polycarboxylic acid with polyhydroxylic alcohol in the molar ratio of from 0.7:1 to 0.9:1 together with a drying oil in the amount of 20 to 60% by weight with respect to the reagent mixture, said modified alkyd resin being hardenable under the action of a metallic salt of an organic acid,

2. a drier consisting essentially of metallic salts of organic acids, said salts being selected from the group consisting of naphthenate, octoate and phthalate, and comprising at least cobalt present in such a quantity as to ensure a concentration of metallic cobalt of 25 to 150 ppm with respect to the modified alkyd resin, and

3. oxalic acid in a quantity of 0.025 to 0.1 parts by weight for every 100 parts by weight of the alkyd resin.

3,859,236
STABILIZED VINYL HALIDE POLYMER COMPOSITIONS

Charles W. Blewett, Ft. Mitchell, Ky., and Philip H. Rhodes, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Apr. 19, 1973, Ser. No. 352,599
Int. Cl. C08f *19/14, 21/04*
U.S. Cl. 260—23 XA **8 Claims**

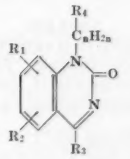
1. A stabilized vinyl halide resin composition containing a bivalent metal glyceroxide in an amount so that about 0.005 to 3 percent by weight metal is present in the compounded resin, said bivalent metal glyceroxide having the empirical formula $C_3H_5O_3Me$ and containing 40–50 percent by weight bivalent metal selected from the group consisting of barium, calcium, cadmium, lead, zinc and tin.

3,859,237
QUINAZOLINE DERIVATIVES

Shigeho Inaba, Takarazuka; Michihiro Yamamoto, Toyonaka; Kikuo Ishizumi, Ikeda; Kazuo Mori, Kobe; Masao Koshiba, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 134,847, April 16, 1971, abandoned. This application Nov. 7, 1972, Ser. No. 304,357
Claims priority, application Japan, Apr. 20, 1970, 45-43057; June 3, 1970, 45-48570; Oct. 2, 1970, 45-86774
Int. Cl. C07d *51/48*
U.S. Cl. 260—251 QB **34 Claims**

1. A quinazoline derivative represented by the formula



(I)

wherein R_1 and R_2 are individually hydrogen, halogen, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, methoxy, ethoxy, n-propoxy, isopropoxy, n-butoxy, nitro, methylthio, ethylthio, n-propylthio, isopropylthio, n-butylthio, isobutylthio, methylsulfonyl, ethylsulfonyl, n-propylsulfonyl, isopropylsulfonyl, n-butylsulfonyl, or isobutylsulfonyl; R_3 is hydrogen, C_{1-4} alkyl, cyclo-C_{3-6} alkyl, naphthyl, furyl, or thienyl; R_4 is cyclo-C_{3-6} alkyl or trihalomethyl; and n is an integer of 1 to 3.

3,859,238
MIXTURES OF BITUMINOUS VACUUM RESIDUES AND/OR VACUUM GAS OILS AND AMORPHOUS POLYOLEFINS FOR THE MANUFACTURE OF SHAPED OBJECTS

Georg Kremser, Gelsenkirchen-Buer, and Arnold Taube, Gladbeck-Zweckel, both of Germany, assignors to Veba-Chemie AG, Gelsenkirchen-Buer, Germany

Filed Oct. 22, 1971, Ser. No. 191,815
Claims priority, application Germany, Oct. 23, 1970, 2052043
Int. Cl. C08f *45/28, 45/52*
U.S. Cl. 260—28.5 AS **2 Claims**

1. A pressure-less workable composition of matter useful for the manufacture of shaped bodies and as a molding composition which consists essentially of a bituminous crude oil vacuum residue having a density under 1.000 g/ml at 25°C, a viscosity of 10°–30°E. at 90°C, a drip point according to Ubbelohde of 30°–50°C, a Cleveland flame point of above 250°C and a amorphous polyolefin which is a copolymer of propene and butene-1, the amount of amorphous polyolefin being between 30 and 80% by weight based upon the combined content of the bituminous product and the amorphous polyolefin.

3,859,239

ADHESIVE FOR BONDING RUBBER TO STEEL

Gerard Edward Van Gils, Tallmadge, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 162,615, July 14, 1971, abandoned. This application Oct. 16, 1972, Ser. No. 298,166

Int. Cl. C08f *45/52, 33/08*

U.S. Cl. 260—28.5 B 12 Claims

1. A curable adhesive composition for bonding bright steel and bright alloy steels to natural rubber and snythetic replacements therefor consisting of, in water, the following admixture wherein the ingredients are in parts by weight per 100 parts by weight of latex solids:

a. a styrene-butadiene-carboxylic acid polymeric latex having a styrene to butadiene ratio of from 30:70 to 70:30 and containing the polymerization product of from about 0.5 to about 2.5 parts of a polymerizable carboxylic acid;

b. a liquid epoxy compound with an average molecular weight ranging from 100 to 450 and an epoxide equivalent of at least 50 and that is water soluble to the extent of at least 97% by weight, in an amount from about 10 to about 50 parts; and,

c. at least a curable amount of an epoxy curing agent selected from the class of polyfunctional primary, secondary and tertiary amines.

3,859,240

PASTES FOR USE IN HARDENING PUTTIES CONTAINING ORGANIC PEROXIDES

Hans Jaspers, Burg Arriensweg 12, Diepenveen, and Reinder Torenbeek, Van Hogendorpstraat 22, Twello, both of Netherlands

Division of Ser. No. 194,700, Nov. 1, 1971, Pat. No. 3,806,477. This application Nov. 8, 1973, Ser. No. 413,765

Claims priority, application Netherlands, Nov. 2, 1970, 7015982

Int. Cl. C08f *45/04, 45/72*

U.S. Cl. 260—29.6 R 8 Claims

1. A paste for use in hardening putties consisting essentially of, in approximate parts by weight:

a. 10–50 parts of a ketone peroxide;

b. 20–70 parts of one or more, plasticizers inert to the ketone peroxide, organic solvents inert to the ketone peroxide or water;

c. 0.1–10 parts of silicon dioxide; and

d. 5–60 parts of synthetic organic polymer of an ethylenically unsaturated monomer having a particle size of less than 300 microns which is insoluble in the paste.

3,859,241

VULCANIZABLE CHLORINATED POLYHYDROCARBON COMPOSITIONS, PROCESS FOR THEIR VULCANIZATION AND VULCANIZED ELASTOMERS THUS OBTAINED

Paolo Scaglione, Milan, and Valentino Zamboni, Busto Arsizio, both of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed June 9, 1971, Ser. No. 151,573

Claims priority, application Italy, June 12, 1970, 25898/70

Int. Cl. C08c *11/08, 11/22, 11/36*

U.S. Cl. 260—31.2 R 7 Claims

1. A vulcanizable composition comprising (A) a linear poly(dichloroalkenamer), the repeating monomeric unit of which is $-CHCl-CHCl-(-CHR-)_n-$ wherein R is hydrogen, methyl, or phenyl, and *n* is a whole number from 3 to 10, and (B) a vulcanizing system made up of (1) an organic base that is the condensation product of ammonia, ethyl chloride and formaldehyde, said condensation product being present in an amount of from about 3 to 12 parts by weight per 100 parts by weight of said poly(dichloroalkenamer), and (2) a bivalent metal oxide selected from the group consisting of magnesium oxide, zinc oxide and lead monoxide, in an amount of from about 10 to 40 parts by weight, per 100 parts by weight of said poly(dichloroalkenamer).

3,859,242

DECORATIVE COATINGS COMPRISING POLYETHYLENE GLYCOLS, NON-VITRIFIABLE FILLERS, AND EITHER POLYETHOXYLATED TERTIARY AMINES OR ALIPHATIC KETONES

Kennedy Areford Jenkins, Washington, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 16, 1974, Ser. No. 470,414

Int. Cl. C08g *51/44, 51/34*; C03c *5/00*

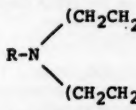
U.S. Cl. 260—32.6 R 5 Claims

1. A decorative coating having a melt viscosity at 93°C. of at least 10,000 cps., said coating consisting essentially of by weight

a. 35 to 50 percent of a vehicle having a melt softening point range from about 40°C. to about 65°C. and

b. 65 to 50 percent of a particulate, non-vitrifiable filler material intimately dispersed in said vehicle,

said vehicle comprising by weight 50 to 94 percent of at least one polyethylene glycol having an average molecular weight ranging from about 2,500 to about 4,500, 5 to 40 percent of at least one polyethylene glycol having an average molecular weight ranging from about 10,000 to about 20,000, and 1 to 10 percent of at least one, normally solid modifier compatible with said polyethylene glycols and selected from the group consisting of polyethoxylated tertiary amines of the formula



where R is a long-chain aliphatic hydrocarbon group having from 12 to 22 carbon atoms and *n* and *m* are integers of at least 1 and have a sum greater than 8, and aliphatic ketones containing from 15 to 43 carbon atoms.

3,859,243

MELAMINE-FORMALDEHYDE RESIN CONTAINING 2-(2-AMINOETHOXY) ETHANOL

Elmer Paul Blasing, Jr., Cincinnati, Ohio, assignor to Formica Corporation, Cincinnati, Ohio

Filed Nov. 27, 1973, Ser. No. 419,325

Int. Cl. C08g *9/30, 9/32*; C08k *1/44*

U.S. Cl. 260—32.6 N 4 Claims

1. The resinous reaction product of (1)at least one mole of formaldehyde per mole of (2) melamine and (3) from about 0.005 to about 0.5 mole of 2-(2-aminoethoxy) ethanol per mole of melamine.

3,859,244

POST-CURABLE CURED POLYURETHANES SOLUBLE IN KETONES AND OTHER OXYGEN-CONTAINING SOLVENTS

John P. Van Der Aue, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 207,614, Dec. 31, 1971,. This application July 30, 1973, Ser. No. 383,368

Int. Cl. C08g *51/34, 22/10*

U.S. Cl. 260—32.8 N 5 Claims

1. A cured polyurethane, post-curable with organic polyisocyanates containing 2 to 3 isocyanato groups, characterized by having at 25°C a Shore A hardness in the range of about 65 to about 95, an ultimate tensile strength in the range of about 2,000 to about 8,000 pounds per square inch gauge, and an ultimate elongation in the range of about 200 to about 900 percent, said cured polyurethane prepared by the method which comprises reacting, at a temperature in the range of about 60°C to about 200°C, an organic diisocyanate with a

mixture which consists essentially of from about 0.3 to about 4 moles of at least one hydroxyl terminated monomer diol selected from diethylene glycol, dipropylene glycol and saturated aliphatic hydrocarbon diols having from 2 to 10 carbon atoms, at least one hydroxyl terminated amine having 2 to 10 carbon atoms selected from primary and secondary amines and one mole of a polymeric polyol having a molecular weight in the range of about 500 to about 3,000 selected from (A) polyester polyols selected from (1) the reaction product of a hydroxyl terminated saturated aliphatic hydrocarbon diol having 2 to 6 carbon atoms and a saturated aliphatic dicarboxylic acid having 4 to 10 carbon atoms with an acid number less than 10 and from (2) polycaprolactones derived from the reaction of diols selected from diethylene glycol, 1,4-butane diol and 1,6-hexane diol with caprolactones having 6 to 8 carbon atoms and (B) polyether polyols prepared by polymerizing or copolymerizing alkylene oxides having from 2 to 4 carbon atoms and hydroxyl terminated saturated hydrocarbon diols having 2 to 4 carbon atoms, wherein the mole ratio of said hydroxyl terminated amine to said monomer diols is in the range of about 0.02:1 to about 0.5:1 and where the isocyanato groups of the diisocyanate are equal to from about 94 to about 99 percent of the total reactive hydrogens supplied by the monomeric diol, the polymeric polyol, and the hydroxyl amine and curing the mixture.

3,859,245

PROCESS FOR THE PRODUCTION OF POLYCARBONATE SOLUTIONS

Werner Stieler; Rolf Oelmeyer; Heinrich Haupt, and Hugo Vernaleken, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 16, 1973, Ser. No. 333,158

Claims priority, application Germany, Feb. 17, 1972, 2207360

Int. Cl. C08g *53/00, 51/30*

U.S. Cl. 260—34.2 **6 Claims**

6. The process of claim **1** wherein said solid polycarbonate solution, in the form of a fluidized bed of granular material, is subjected to a flowing stream of solvent.

3,859,246

BUTANEDIOL POLYESTER COMPOSITIONS CONTAINING TALC AND HAVING IMPROVED HEAT-DISTORTION TEMPERATURES

Winston J. Jackson, Jr.; Herbert F. Kuhfuss, and John R. Caldwell, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 867,902, Oct. 20, 1969, abandoned. This application Nov. 30, 1973, Ser. No. 420,493

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **5 Claims**

1. A stiff, thermoplastically moldable composition having an appreciably increased heat distortion temperature comprising a linear polyester of at least about 80 mole proportions of 1,4-butanediol, based on 100 proportions of diol, and at least 80 mole proportions of terephthalic acid, based on 100 mole proportions of dicarboxylic acid, or their condensable derivatives, having incorporated therein at least about 10 percent by weight of talc, based on the weight of said composition.

3,859,247

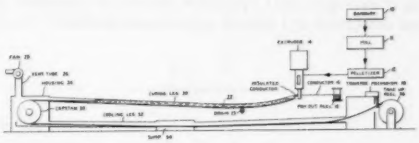
PRESSURELESS CURE SYSTEM FOR CHEMICALLY CROSS-LINKING ETHYLENE CONTAINING POLYMERS

Burton Thornley MacKenzie, Jr., Monroe, Conn., assignor to General Electric Company, New York, N.Y.

Continuation-in-part of Ser. No. 91,357, Nov. 20, 1970, abandoned, which is a continuation-in-part of Ser. No. 748,816, July 30, 1968, abandoned. This application Nov. 10, 1972, Ser. No. 305,544

Int. Cl. B29f *3/08;* **C08f** *45/04*

U.S. Cl. 260—42.15 **11 Claims**



1. A method of curing a composition comprising an ethylene containing polymer and mineral filler treated with about 0.15 to 4.0 percent of tetramethyltetravinylcyclotetrasiloxane by weight of the filler at substantially atmospheric pressure to a relatively dense and substantially non-porous cured polymeric composition, comprising the steps of: preparing the composition by admixing the ingredients comprising an ethylene containing polymer, mineral filler, treating tetramethyltetravinylcyclotetrasiloxane, and curing agent; and thereafter heating the said admixed composition at about atmospheric pressure in an non-aqueous heat transfer medium to a temperature and for a dwell time sufficient to effect an in situ cross-linking cure of the ethylene containing polymer to a relatively dense and substantially non-porous cured filled polymer composition.

3,859,248

THERMAL OXIDATIVELY STABLE POLYCARBONATE COMPOSITION

Charles A. Bialous, Evansville, and Donald B. G. Jaquiss, New Harmony, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

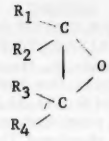
Continuation-in-part of Ser. No. 28,988, April 15, 1970, abandoned. This application June 17, 1974, Ser. No. 479,899

Int. Cl. C08g *51/58*

U.S. Cl. 260—45.8 A **4 Claims**

1. A thermal oxidatively stable polycarbonate composition which is the residue of the condensation reaction of 2,2-bis (4-hydroxyphenyl) propane, a carbonate precursor and 0.0005 to about 0.01 mole per mole of bisphenol-A of a phosphorus dihalide of the formula:

wherein X is a halogen atom independently selected from the group consisting of fluorine, chlorine, bromine and iodine and R is an organic radical selected from the group consisting of aryl, haloaryl, alkyl, cycloalkyl, aralkyl and alkaryl radicals of 1–25 carbon atoms having in admixture therewith 0.01 to about 1.0 weight percent of an epoxy composition having the following formula:



wherein R_1, R_2, R_3 and R_4 are organic radicals of 1–24 carbon atoms and are independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, substituted cycloalkyl, aryl and substituted aryl radicals and mixtures thereof.

3,859,249

PROCESS FOR MANUFACTURE OF FLAME RETARDANT POLYESTER

Gerald Willard McNeely, Arden, N.C., assignor to Akzona Incorporated, Ashville, N.C.

Filed Dec. 7, 1972, Ser. No. 313,052

Int. Cl. C09k *3/28*

U.S. Cl. 260—45.9 NP **4 Claims**

1. In the process of preparing polyester polymer by ester interchange and polycondensation, the improvement wherein flame retarded polyester polymer is prepared by adding from 1 to 20 percent by weight of a thermally and chemically stable cyclophosphazene derivative at the beginning of ester interchange, said derivative being selected from the group consisting of cyclotri- and cyclotetraphosphazene having, respectively, 6 or 8 substituents thereon selected from the group consisting of phenyl or phenoxy said cyclophosphazene derivative being thermally and chemically stable at temperatures up to about 300° C.

3,859,250

RADICAL BLOCK COPOLYMER THERMALLY STABILIZED BY A SULFUR CONTAINING AMINO ACID

Lawrence M. Fodor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 19, 1973, Ser. No. 342,531

Int. Cl. C08g *51/60*

U.S. Cl. 260—45.85 A **8 Claims**

1. A composition stabilized against melt flow drop off comprising: a resinous radial block copolymer of a monovinyl-substituted aromatic compound and a conjugated diene, said copolymer comprising 70–95 weight percent of said monovinyl-substituted aromatic compound having incorporated therein an effective stabilizing amount of (a) 0.025 to 2 parts by weight per 100 parts by weight of said copolymer of a sterically hindered phenol, (b) 0.25 to 5 parts by weight per 100 parts by weight of said copolymer of an organic phosphite, and (c) 0.05 to 2 parts by weight per 100 parts by weight of said copolymer of a sulfur containing amino acid having the formula

$$R^5SR^6(NH_2)COOM$$

wherein R^5 is hydrogen, a 1–10 carbon atom hydrocarbon radical or

$$-SR^6(NH_2)COOM,$$

R^6 is an alkylene group having 1–10 carbon atoms, and M is hydrogen, $-NH_4$, or a periodic Group IA metal.

3,859,251

POLY(ESTER-AMIDE)

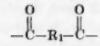
Herbert F. Kuhfuss, and Winston J. Jackson, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 19, 1973, Ser. No. 408,251

Int. Cl. C08g *17/02*

U.S. Cl. 260—47 CZ **7 Claims**

1. A poly(ester-amide) having an inherent viscosity of at least 0.4 measured at 25° C. using 0.50 gram of polymer per 100 ml. of a solvent composed of 60 volumes of phenol and 40 volumes of tetrachloroethane, the poly(ester-amide) consisting essentially of the following divalent radicals:

(A) 

(B)

(C)

wherein

R_1 is from 50 to 100 mole percent of a divalent aliphatic radical having from five to eight carbon atoms in a straight chain and from 50 to 0 mole percent of a divalent aromatic radical having from six to 16 carbon atoms with the carbonyl linkages separated by at least three carbon atoms,

R_2 is from 60 to 100 mole percent para phenylene radical and from 40 to 0 mole percent of a divalent aromatic radical having six to 12 carbon atoms, and

the range of radical (C) is from 40 to 75 mole percent based on the total moles of (A) and (C) combined.

3,859,252

POLYAMIDO POLYSULFONE THERMOPLASTICS AND INTERMEDIATES THEREOF

Iwhan Cho, Lincoln Park, N.J., assignor to Uniroyal, Inc., New York, N.Y.

Filed Apr. 28, 1972, Ser. No. 248,367

Int. Cl. C08g *20/20*

U.S. Cl. 260—49 **15 Claims**

1. Thermoplastic condensation interpolymers in which the recurring unit has the structure

[—Ar′ —SO_2—X—SO_2—Ar′— (bis-amide structure)]—,

wherein X is arylene or oxydiarylene, Ar′ is phenylene, "bisamide structure" is —NH—CO—R—CO—NH—, —CO—NH—R′—NH—CO— or —NH—SO_2—R″—SO_2—NH—, R is alkylene or phenylene, R′ is phenylene or p,p′-diphenylene, and R″ is p,p′-oxydiphenylene.

3,859,253

POLYOXETANES WITH SULPHONIC ACID GROUPS

Guy Bourat, Bourg-la-Reine, and Rodolphe Margraff, Ris-Orangis, both of France, assignors to Rhone-Poulenc S.A., Paris, France

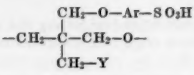
Filed July 24, 1972, Ser. No. 274,741

Claims priority, application France, July 26, 1971, 71.27272

Int. Cl. C08g *23/04*

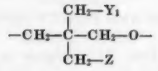
U.S. Cl. 260—49 **15 Claims**

1. Polyoxetanes which consist essentially of a plurality of units of the formula:



(I)

and of units of the formula:



(II)

in which each of Y, Y_1 and Z, which may be identical or different, represents a halogen atom or an —OH, —O—Ar′ or —CN radical, —Ar′ being a monovalent aromatic radical, such that Y can also represent an —Ar—SO_3H radical, and Ar represents a divalent aromatic radical, the chain oxygen atom of each recurring unit being attached to the chain methylene group of the adjacent recurring unit.

3,859,254

FILM FORMING POLYMERIC COMPOSITIONS OF 7,7-IMETHYL-7H-DIBENZO [c,h]XANTHENE COMPOUNDS

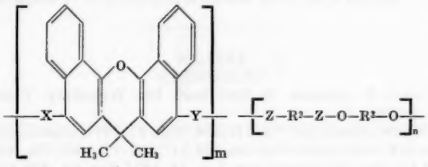
Frederick L. Hamb, and John C. Wilson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 331,134, Feb. 9, 1973, abandoned, Continuation-in-part of Ser. No. 158,525, June 30, 1971, abandoned. This application Mar. 18, 1974, Ser. No. 452,299

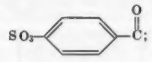
Int. Cl. C08g *17/06, 17/08*

U.S. Cl. 260—49 **14 Claims**

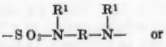
1. A film forming polymer having a glass transition temperature greater than 200°C comprising recurring units having the formula I:



wherein X is SO_2 or

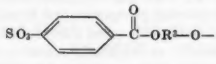


Y is

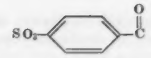


or

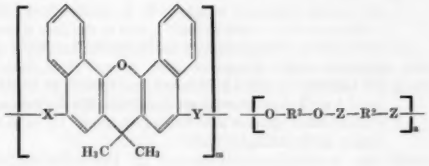
$-SO_3-R_3-O$ when X is SO_2 or



when X is



or II:



wherein X is O and Y is

Z is SO_2 or

m is 1 to 100 mole percent and *n* is 100-*m* mole percent; R is a radical selected from the group consisting of alkylene radicals of from two to 12 carbon atoms, cycloalkylenebisalkylene radicals and arylenebisalkylene radicals; each R^1 which can be the same or different is a radical selected from the group consisting of hydrogen atoms, alkyl radicals of from one to four carbon atoms, aralkyl radicals, aryl radicals tolyl, anisyl and phenethyl radicals; each R^2, which can be the same or different, is a radical selected from the group consisting of cycloalkylene radicals, arylene radicals, substituted arylene radicals wherein the substituents are halogen, nitro, cyano, alkoxy of one to six carbon atoms and alkyl radicals of one to six carbon atoms, and arylenebisalkylene radicals having one to six carbon atoms in the alkylene portion, and each R^3, which can be the same or different, is a radical selected from the group consisting of alkylene radicals of from two to 10 carbon atoms, cycloalkylene, arylene radicals, and substituted arylene radicals wherein the substituents are halogen, nitro, cyano, alkyl of one to six carbon atoms, and alkoxy of one to six carbon atoms.

3,859,255

METHYLOLGLYCIDYL ETHERS OF POLYVALENT PHENOL ETHERS

Alfred Heer, Am Stausee 25, Birsfelden, and Alfred Renner, Entenweidstrasse 18, Muenchenstein, both of Switzerland

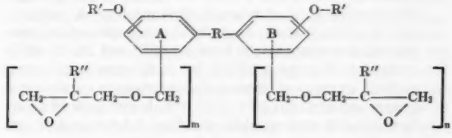
Filed Apr. 27, 1972, Ser. No. 248,279

Claims priority, application Switzerland, May 18, 1971, 7282/71

Int. Cl. C08g *30/14*

U.S. Cl. 260—51 EP **14 Claims**

1. A Methylolglycidyl ether of formula I:



wherein

R represents an alkylene or alkenylene group optionally substituted by glycidyl ether groups, or a sulphonyl group,

R′ represents an alkyl, or alkenyl, optionally interrupted by oxygen atoms, or containing oxygen-containing substituents, and having 1 to 12 carbon atoms in the aliphatic radical, or a methylglycidyloxyalkyl or glycidyloxyalkyl group having 1-4 carbon atoms in the alkyl group,

R″ represents hydrogen or the methyl group, and *m* and *n* each stand for 0, 1 or 2, whereby

a. the partial molecular weight of R′ is smaller than 250,

b. the sum of $m + n$ is at least 1, and in the case where $m + n = 1$, R′ represents a methylglycidyloxylakyl or glycidyloxyalkyl group,

c. the benzene nuclei A and B can, in addition, be substituted by alkyl or alkenyl groups optionally containing glycidylether groups and having at most 12 carbon atoms, or by halogen, and

d. the methylglycidyloxymethyl or glycidyloxymethyl groups are in the o- or p-position with respect to the etherified phenolic hydroxyl groups.

3,859,256
HALOGENATED 3-(4′-BIPHENYLYL)-BUTANOLS

Helmut Teufel; Wolfhard Engel, and Ernest Seeger, all of Biberach Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

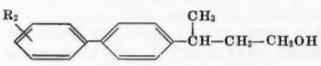
Filed Aug. 13, 1973, Ser. No. 387,802

Claims priority, application Germany, Aug. 17, 1972, 2240440

Int. Cl. C07c *31/14*

U.S. Cl. 260—618 D **3 Claims**

1. A compound of the formula



wherein

R_1 is halogen.

3,859,257
METHOD FOR THE PREPARATION OF POLYESTERS OF 1,4-BUTANE DIOL

Gerhart Schade, Witten-Bommern, and Hans Melin, Witten, both of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Aug. 10, 1971, Ser. No. 170,654

Claims priority, application Germany, Sept. 17, 1970, 2045914

Int. Cl. C08g *17/013*

U.S. Cl. 260—75 M **3 Claims**

1. A process for producing a polyester polymer from 1,4-butanediol and a polycarboxylic acid component which is a mixture of an aromatic dicarboxylic acid or an aliphatic dicarboxylic acid and a lower alkyl ester of an aromatic dicarboxylic acid or a lower alkyl ester of an aliphatic dicarboxylic acid wherein said polycarboxylic acid is at least partly aromatic which comprises the steps of:

a. In a first stage subjecting a mixture of 1,4-butanediol and a mixture of an aromatic dicarboxylic acid or an aliphatic dicarboxylic acid and a lower alkyl ester of an aromatic dicarboxylic acid or a lower alkyl ester of an aliphatic dicarboxylic acid to a catalytic precondensation conducted at a temperature between 180° and 200°C while removing cleavage products by distillation in the presence of an organotitanate polycondensation catalyst in a proportion of about 10^{-2} to 10^{-4} mole per mole of dicarboxylic acid moiety while distilling 1,4-butanediol and cleavage products overhead for a sufficient time to reduce the flow of 1,4-butanediol overhead to up to about 10% of its initial distillation flow rate, the molar ratio of butanediol to the mixture of dicarboxylic acid and dicarboxylic ester being 1.05–1.25:1; and

b. In a subsequent stage, subjecting the product from the precondensation stage to a polycondensation at a higher temperature than the temperature employed in the precondensation stage in the presence of a polycondensation catalyst, said polycondensation being carried out at a temperature between about 250° and 310°C in a vacuum.

3,859,258
VULCANIZATION AND DIRECT BONDING OF DIENE ELASTOMERS

Louie G. Manino, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Feb. 2, 1973, Ser. No. 329,141

Int. Cl. C08g *22/00, 22/32*; C08c *11/40*

U.S. Cl. 260—77.5 CR **13 Claims**

1. A method for curing an unsaturated diene elastomer in the substantial absence of an oxidizing agent which comprises incorporating into said elastomer a non-sulfur vulcanizing system consisting essentially of from about 1 to about 6 phr of an aryl dioxime and from about 1 to about 9 phr of an organic polyisocyanate having at least two reactive isocyanate groups to give a total dioxime-polyisocyanate content in the range from about 2 to about 13 phr and sufficient to cure said elastomer, and curing the thus-compounded elastomer.

3,859,259
VULCANIZABLE FLUOROELASTOMER

Jerald Rice Harrell, Wilmington, Del., and Walter Werner Schmiegel, Kennett Sq., Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 22, 1973, Ser. No. 390,415

Int. Cl. C08g *41/04*; C08f *15/40*

U.S. Cl. 260—77.5 R **4 Claims**

1. A vulcanizable fluoroelastomer which is a copolymer containing interpolymerized units in an amount equal to

A. about 50–65 mole percent of tetrafluoroethylene,

B. about 5–26 mole percent of vinylidene fluoride and

C. about 20–45 mole percent of at least one olefin component selected from the group: (1) propylene, (2) butene-1, (3) a mixture of about 0.1–50 mole percent of ethylene or isobutylene and about 50–99.9 mole percent of propylene or butene-1, and (4) a mixture of about 50 mole percent of ethylene and 50 mole percent of isobutylene.

3,859,260
OLIGOMERS

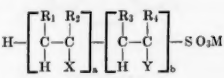
Leland E. Dannals, 34 Split Rock Dr., Waterbury, Conn. 06706

Continuation of Ser. No. 181,634, Sept. 17, 1971, abandoned, which is a division of Ser. No. 674,737, Oct. 12, 1967, Pat. No. 3,646,099. This application Aug. 22, 1973, Ser. No. 390,472

Int. Cl. C08f *3/92*; C08g *33/00*

U.S. Cl. 260—79.3 R **5 Claims**

1. A water soluble oligomer having the formula:

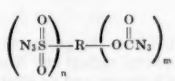


wherein M is a water soluble cation of a bisulfite salt; R_1, R_2, R_3 and R_4 are the same or different, and are selected from the group consisting of hydrogen, methyl and ethyl; Y is at least one hydrophilic group selected from the group consisting of —COOH, —$CONH_2$, —OCH_3, —OC_2H_5, and —CH_2OH; X is at least one hydrophobic group selected from the group consisting of —$COOR_5OH$, —$CONHR_5OH$, —CONHR, —COOR, —OOCR, —$COOR_5OR$ and —$CONHR_5COR$ wherein R is an alkyl group containing 1 to 8 carbon atoms and R_5 is an alkylene group containing 1 to 4 carbon atoms;

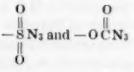
$a+b$ is from 20 to 100 ; and $a/a+b$ is greater than zero, but not greater than 0.6.

3,859,261
AZIDES
David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Division of Ser. No. 151,157, June 8, 1971, Pat. No. 3,766,216, which is a continuation-in-part of Ser. No. 761,847, Sept. 23, 1968, abandoned. This application Dec. 20, 1972, Ser. No. 317,014
Int. Cl. C08f *27/06, 27/08;* **C08g** *23/20*
U.S. Cl. 260—79.3 R **7 Claims**

7. A cross-linkable composition comprising a blend of (1) at least one polymer selected from the group consisting of saturated, unsaturated, linear, non-linear, crystalline and amorphous hydrocarbon homopolymers, copolymers and terpolymers; cellulose esters; cellulose ethers; polyesters; poly(alkylene oxide) polymers; polyamides; condensation products of triallyl pentaerythritol and diallylidene pentaerythritol; esters of triallyl pentaerythritol and drying oil fatty acids; poly(vinyl alkyl ethers); poly(vinyl acetals); vinyl chloride polymers having a vinyl chloride content of at least ten mol percent; nitrocellulose; chlorinated natural rubber; sulfochlorinated polyethylene; polysulfide rubber; polyurethane rubber; poly(vinyl acetate); ethylene-vinyl acetate copolymer; poly(vinylidene chloride); vinylidene chloride-acrylonitrile copolymers; ethyl acrylate-2-chloroethyl vinyl ether copolymers; poly(ethyl acrylate); poly(ethyl methacrylate); poly[3,3-bis(chloromethyl)oxetane]; vinyl modified poly(dimethyl siloxane); polychloroprene; and butadiene-acrylonitrile copolymers; and (2) from about 0.01 to about 50% by weight based on the weight of the polymer of at least one azide compound having the formula



wherein R is a polyvalent organic radical substantially inert to linking reactions, n and m are each 1–10 and the



groups are attached to different carbon atoms in said R group.

3,859,262
PROCESS FOR THE MANUFACTURE OF FLUORINE-CONTAINING POLYMERS
Robert Hartwimmer, Burghausen/Salzach, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany
Filed July 21, 1971, Ser. No. 164,812
Claims priority, application Germany, July 25, 1970, 2037028
Int. Cl. C08f *1/64, 1/70*
U.S. Cl. 260—80.77 **11 Claims**

1. A process for the manufacture of a copolymer containing from 30 to 80 mole %, calculated on the total copolymer, of at least one fluorinated mono-α-olefin having from 2 to 6 carbon atoms and from 20 to 70 mole % of ethylene by copolymerization of said fluorinated mono-α-olefin with ethylene in an aqueous phase which comprises carrying out the copolymerization at a pressure of from 0 to 25 atmospheres gauge and a temperature of from 0° to 100°C. in an acid medium in the presence of from 0.001 to 0.1% by weight, calculated on the total amount of the polymerization bath, of a catalyst selected from the group consisting of an acid of manganese, a salt thereof and a derivative forming said acid of manganese under the reaction conditions.

3,859,263
PREPARATION OF UNSATURATED COPOLYMERS
James M. O'Connor, Stow; Richard R. Smith, Cuyahoga Falls, and Joginder Lal, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed July 27, 1973, Ser. No. 383,213
Int. Cl. C07c *3/00, 13/02;* **C08f** *1/72, 5/00*
U.S. Cl. 260—80.78 **12 Claims**

1. A process for preparing sulfur vulcanizable copolymers by bringing at least one α-olefin and at least one cyclomonoolefin and/or a nonconjugated cyclopolyolefin into contact with a catalyst capable of promoting olefin cross-metathesis between an α-olefin and a cyclomonoolefin or a nonconjugated cyclopolyolefin, then reacting said olefin cross-metathesis product mixture without catalyst removal with at least one α-olefin using a coordination catalyst comprising at least one metal compound, the metal portion of which is selected from the transition metals of Groups IVb and Vb of the Periodic Table in conjunction with at least one organometallic compound, the metal portion of which is selected from metals of Groups Ia, IIa, IIb and IIIa of the Periodic Table.

3,859,264
DIRECT STABILIZATION OF SULFONATED POLYMERS
George A. Knudsen, Jr., Scotch Plains, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.
Filed Sept. 2, 1970, Ser. No. 69,137
Int. Cl. C08f *45/56, 45/62*
U.S. Cl. 260—45.85 R **8 Claims**

1. A method for stabilizing water-dispersible resin sulfonates which comprises the steps of:

a. preparing a slurry of the resin sulfonic acid in a nonreactive suspending medium;
b. adding to said slurry a powdered base, said base being insoluble in the suspending medium;
c. separating the resulting insoluble mixture of said acid and base from the suspending medium;
and d. drying the acid-base mixture obtained from step (c).

3,859,265
PRODUCTION OF POLYALKENMERS FROM MONOMERS OF NORBORNENE STRUCTURE CONTAINING POLAR GROUPS
Paul Hepworth, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
Filed June 21, 1972, Ser. No. 264,874
Int. Cl. C08f *3/62, 3/74, 5/00*
U.S. Cl. 260—85.5 R **9 Claims**

1. A polymerisation process which comprises contacting a norbornene which is in the liquid phase and which is substituted in the five-position by a substituent selected from the group consisting of a —O.COR group, a —COOR group, where R is a C_1 to C_6 alkyl, a halogen atom and a nitrile group or which is substituted by one of said substituents pendant to the five-position through a methylene radical, with a catalyst consisting essentially of a tungsten, molybdenum or tantalum compound and an organo-metallic compound of aluminum, magnesium, berylium or zinc, the ratio of metal in the organometallic compound to tungsten, molybdenum or tantalum being at least 2:1.

3,859,266
ALCOHOLYSIS PRODUCTS

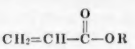
Donald D. Carlos, Middletown, and Darrell D. Hicks, Jeffersontown, both of Ky., assignors to Celanese Coatings & Specialties Company, New York, N.Y.

Filed Nov. 14, 1973, Ser. No. 415,848
Int. Cl. C08f *29/50, 45/28, 45/34*
U.S. Cl. 260—86.1 E **6 Claims**

1. A thermosetting composition comprising a blend of:

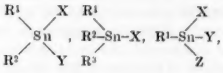
A. a first polymer containing at least three aliphatic hydroxy groups per molecule and having a weight per hydroxy group of about 50 to 1,000;

B. a second polymer different from said first polymer containing at least one mol of ester monomer per mol of hydroxy group in the said first polymer wherein the ester monomer has the general formula:

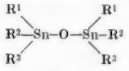


wherein R is an alkyl group having 5 or less carbon atoms;

C. a catalyst selected from the group consisting of



or



wherein R^1, R^2 and R^3 are 1 to 18 carbon atom alkyl or acyl groups and wherein
X, Y, and Z are R^5

Cl—, Br—, I—, or $—OR^6$, wherein R^5 and R^6 are 1 to 18 carbon alkyl groups; and

D. a solvent therefor.

3,859,267
PROCESS FOR OLEFIN POLYMERIZATION

Kazuo Yamaguchi, Tokyo; Natsuki Kanoh, Sagamihara-shi; Shigeaki Okano, Tokyo, and Atsushi Murakami, Kawasaki-shi, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Apr. 12, 1973, Ser. No. 350,592
Claims priority, application Japan, Apr. 13, 1972, 47-37135
Int. Cl. C08f *15/04, 19/02;* **C08d** *3/04, 3/08*
U.S. Cl. 260—88.2 R **12 Claims**

1. A process for the polymerization of an α-olefin which comprises polymerizing an α-olefin or a mixture thereof in a presence of a catalyst system comprising (1) a first solid component prepared by reducing a mixture or a reaction product of (*a*) a titanium tetrahalide, (*b*) a titanium compound having the formula

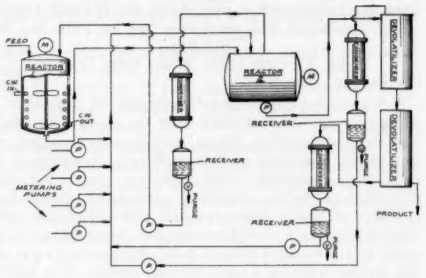
$$TiX_n(OR)_{4-n}$$

wherein R represents an alkyl group of 1 – 14 carbon atoms; X represents a halogen atom and n represents an integer from 0 – 3; and (*c*) a vanadyl dihalide with a first organoaluminum compound; and (2) a second component consisting of a second organoaluminum compound.

3,859,268
CONTINUOUS MASS POLYMERIZATION OF POLY ALKENYL AROMATIC POLYMERS

Joseph Novack, Springfield, Mass., and Wallace G. Bir, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 9, 1973, Ser. No. 339,782
Int. Cl. C08f *1/04, 1/06, 1/98*
U.S. Cl. 260—88.2 **12 Claims**



1. An improved continuous mass polymerization process for making polyalkenyl aromatic polymers having a molecular weight within the range of from about 20,000 to 100,000 Staudinger, and having a dispersion index of from about 2.0 to 4.0 which comprises the steps of continuously

A. Charging to an initial continuous stirred reaction zone adapted for variable fillage a monomer composition comprising at least one monoalkenyl aromatic compound of the formula

where Ar is selected from the group consisting of a phenyl radical and a halophenyl radical and X is selected from the group consisting of hydrogen and an alkyl radical of less than three carbon atoms,

B. Maintaining reaction conditions in said initial continuous stirred reaction zone filled to from 10 to 100% of its volume with liquid phase mixture of said monomer composition and polymer thereof such as to produce a polymer of 20,000 to 100,000 $MW_{st.}$ and a solids concentration of said polymer of between 10 and 60 percent,

C. Withdrawing from said initial continuous stirred reaction zone a liquid mixture of said polyalkenyl aromatic polymer and unreacted alkenyl aromatic monomer composition,

D. Charging said withdrawn polymer and monomer mixture to a final reaction zone, which final reaction zone is a continuous stirred reaction zone adapted for variable fillage with the said charged polymer and monomer mixture in liquid phase and in which the internal temperature or pressure is controlled by removal of vapor phase therefrom,

E. Maintaining reaction conditions in said final reaction zone such as to produce a polymer of from 20,000 to 100,000 $MW_{st.}$ and of an increased solids level of polymer of from about 40 to about 90 percent when said final reaction zone is filled to from about 15 to about 75 percent of its volume with liquid phase mixture of said monomer composition and said polymer and the remainder of the volume of said zone occupied by vapor phase monomer composition,

F. The charging of said monomer composition to said initial reaction zone being at a rate approximating the total rate at which monomer is polymerized and withdrawn from said initial reaction zone, and

G. Removing said liquid phase from said final reaction zone at a rate sufficient both to maintain said vapor phase of

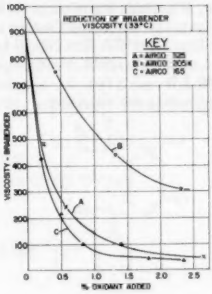
monomer composition therein and approximating the total rate at which all additions of liquids are charged to said final reaction zone.

3,859,269

OXIDATIVE DEGRADATION OF POLYVINYL ALCOHOL

Hans W. Maurer, Paducah, Ky., assignor to Westvaco Corporation, New York, N.Y.

Filed Sept. 28, 1973, Ser. No. 401,876
Int. Cl. C08f 3/34
U.S. Cl. 260—91.3 VA 3 Claims



1. The method of treating an aqueous polyvinyl alcohol solution to produce a predictable reduction in its viscosity which comprises oxidizing the polyvinyl alcohol solution at a temperature of from about 33° to 150°C. with hydrogen peroxide in the presence of a Cu^{++} metallic ion catalyst in the ratio of about 10 to 1 with the addition of by weight from about 0.20 percent –1.30 percent hydrogen peroxide and by weight 0.02 percent–0.13 percent of the Cu^{++} catalyst the weight of the hydrogen peroxide and the Cu^{++} ion catalyst being based on the weight of poly vinyl alcohol in solution, and recovering the reduced in viscosity polyvinyl alcohol solution.

3,859,270

REFINING OF FATTY ACIDS

Andrejs Zvejnieks, Lakeland, Fla., assignor to AZS Corporation, Atlanta, Ga.

Filed Feb. 22, 1972, Ser. No. 228,372
Int. Cl. C09f
U.S. Cl. 260—97.7 10 Claims

1. A method of refining impure fatty acids containing 6 to 22 carbon atoms comprising the steps of decreasing the volatility of said fatty acids by esterifying said fatty acids with hydroxyl containing organic compounds selected from the group consisting of ethylene glycol, propylene glycol, glycerine, sorbitol, mannitol, pentaerythritol, neopentyl glycol, hexylene glycol butane diol, diethylene glycol, dipropylene glycol, ethylene oxide and propylene oxide, distilling out the unesterified compounds under vacuum and recovering purified fatty acids from the residue.

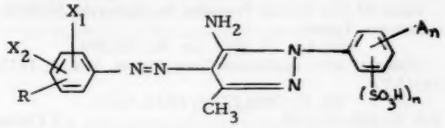
3,859,271

REACTIVE YELLOW β-SULFATOETHYLSULFONYL PHENYLAZO-4-(1-SUBSTITUTED PHENYL-3-METHYL-5-AMINO)-PYRAZOLE DYES

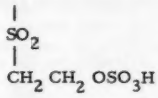
Hiroshi Sugiyama, Ashiya-shi; Hideo Otsuka, Ibaraki-shi, Osaka; Masakuzu Yamamoto, Takarazuka-shi; Takuo Ikeda, Ibaraki-shi, Osaka, and Masami Okuno, Minoo-shi, Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Feb. 24, 1969, Ser. No. 801,795
Claims priority, application Japan, Feb. 28, 1968, 43-13104; Feb. 28, 1968, 43-13105
Int. Cl. C09b 26/38, 62/82; D06p 1/38
U.S. Cl. 260—163 8 Claims

1. A compound of the formula



wherein R is



X_1 and X_2 represent a member selected from the group consisting of a hydrogen atom, chlorine atom, methyl group, methoxy group, ethoxy group, carboxyl group, and sulfonic acid group; A represents a member selected from the group consisting of a hydrogen atom, chlorine atom, methyl group, methoxy group and nitro group; and *n* is an integer of 1 or 2.

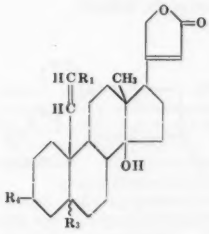
3,859,272

19-ALKYLENE-14- β-HYDROXY-CARDENOLIDE DERIVATIVES AND PROCESS FOR PREPARING THEM

Ulrich Stache, Hefheim Taunus; Werner Fritsch, Neuenhain Taunus; Werner Haede, Hefheim Taunus; Kurt Radscheit, and Ernat Lindmer, both of Frankfurt am Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Continuation of Ser. No. 842,352, July 16, 1969, abandoned. This application July 7, 1972, Ser. No. 269,612
Claims priority, application Germany, July 23, 1968, 1793009
Int. Cl. C07c 173/00
U.S. Cl. 260—210.5 1 Claim

1. A 19-alkylene-14β-hydroxy cardenolide of the formula



wherein R_1 taken alone is —CN, or taken together with an —OH group in the 5-position, forms a lactone ring; R_3 is 5α—H, 5β—H, or 5β—OH; and R_4 is —OH, 3-

tetrahydropyranyl ether, or a 6-membered cyclic monosaccharide.

3,859,273

PHENYLALANINE COMPOUNDS

Laszlo Beregi, Boulogne S/Seine; Pierre Hugon, Ru Eil-Malmaison; Jacques Duhault, Chatou, and Jean-Claude Poignant, Bures S/Yvette, all of France, assignors to Science Union Et Cie, Societe Francaise De Recherche Medicale, Suresnes, France

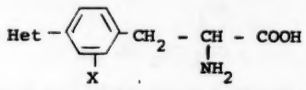
Filed Feb. 16, 1973, Ser. No. 333,094

Claims priority, application Great Britain, Mar. 6, 1972, 10365/72

Int. Cl. C07d *27/30, 29/28, 41/04*

U.S. Cl. 260—239 BF **2 Claims**

1. A compound selected from the group consisting of (A) phenylalanine compounds of the general formula:



wherein:

X is selected from the group consisting of hydrogen, halogen, methyl, ethyl and trifluoromethyl, and

Het is a nitrogen containing heterocyclic radical bonded to the phenyl nucleus by its nitrogen atom and selected from the group consisting of hexamethyleneimino, piperidino, methylpiperidino, dimethylpiperidino and **3-azabicyclo** (3,3,0) octyl;

(B) physiologically tolerable salts thereof with bases.

3,859,274

ACYLTHIOMETHYL ESTERS OF PENICILLINS

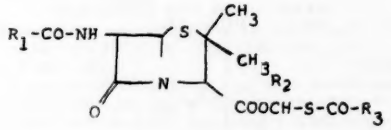
Hermann Breuer, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed July 13, 1972, Ser. No. 271,478

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **9 Claims**

1. A compound of the formula



wherein R_1 is phenoxymethyl, phenyl-lower alkyl, and phenyl-lower alkyl bearing on the α-carbon hydroxy, amino, carboxy or ureido, R_2 is hydrogen, lower alkyl, phenyl or phenyl-lower alkyl, and R_3 is lower alkyl, lower alkenyl, phenyl or phenyl-lower alkyl, and acid addition salts of the basic members thereof.

3,859,275

THIENODIAZEPINE COMPOUNDS

Michio Nakanishi, Oita; Masami Shiroki, Yoshitomi-machi; Tetsuya Tahara, Yoshitomi-machi, and Kazuhiko Araki, Yoshitomi-machi, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed May 31, 1972, Ser. No. 258,285

Claims priority, application Japan, May 31, 1971, 46-38086; May 31, 1971, 46-38087; May 31, 1971, 46-38088

Int. Cl. C07d *53/02*

U.S. Cl. 260—239.3 B **1 Claim**

1. The compound: 1-Methyl-3-hydroxy-5-o-chlorophenyl-7-ethyl-1,2-dihydro-3H-thieno-[2,3-e][1,4]diazepin-2-one.

3,859,276

7-CHLORO-1,3-DIHYDRO-5-2-POLYFLUOROALKOXYPHENYL)-2H-1,4-BENZODIAZEPIN-2-ONES

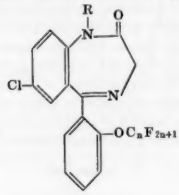
Janos Kollonitsch, Westfield, and George A. Doldouras, Fanwood, N.J., assignors to Merck and Co., Inc., Rahway, N.J.

Filed Dec. 13, 1972, Ser. No. 314,633

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **2 Claims**

1. A compound having the structure:



wherein R is H or lower alkyl having from 1 to 3 carbon atoms; *n* is 1, 2 or 3; and the acid addition salts thereof.

3,859,277

D-1-1-(β-CHLOROETHYL)-3-(2-OXO-3-HEXAHYDROAZEPINYL)-1-NITROSOUREA

Masuo Murakami; Kaichiro Ichikawa, both of Tokyo; Kazuo Imai, Omiya; Norio Sato, Shiraoka-machi; Noriki Ito, Ageo; Yoshihiko Oka, Kawagoe; Tsutomu Kawamura, and Teruaki Ozasa, both of Ageo, all of Japan, assignors to Yamanouchi Pharmaceutical Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 264,858, June 21, 1972, abandoned. This application Dec. 29, 1972, Ser. No. 319,337

Claims priority, application Japan, June 28, 1971, 46-46955; Apr. 27, 1972, 47-42496

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 R **1 Claim**

1. DL-1-(β-chloroethyl)-3-(2-oxo-3-hexahydro azepinyl)-1-nitroso urea.

3,859,278

PROCESS FOR SEPARATING LACTAMS

Abraham H. De Rooy, Geleen, and Reijer Goettsch, Beek, both of Netherlands, assignors to Stamicarbon B. V., Geleen, Netherlands

Continuation-in-part of Ser. No. 313,638, Dec. 11, 1972,. This application Aug. 1, 1973, Ser. No. 384,747

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A **3 Claims**

1. In a process for the recovery of lactam from a mixture of at least one lactam having 4 to 12 carbon atoms and sulfuric acid, said process comprising neutralizing said sulfuric acid in said mixture to ammonium hydrogen sulfate at a temperature of at least about 110°C in the presence of an amount of at least one organic solvent for said lactam sufficient to dissolve said lactam, said solvent being inert to sulfuric acid at a temperature of 150°C, with at least one neutralizing agent selected

from the group consisting of ammonia, ammonium sulfate, and triammonium hydrogen sulfate, to produce a melt of ammonium hydrogen sulfate and a solution of lactam in said organic solvent, said solution also containing free sulfuric acid, and recovering the lactam from said solution,

the improvement comprising adding water to the said solution of lactam concurrently with an amount of said neutralizing agent, thereby forming a solution of ammonium hydrogen sulfate, and thereafter separating the thus formed salt solution from the remaining solution of lactam.

3,859,279
BENZOFURAN DERIVATIVES AND PROCESSES THEREFOR

Graham Alwyn Fothergill, Knebworth; John Mervyn Osbond, Hatfield, and James Charles Wickens, St. Albans, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

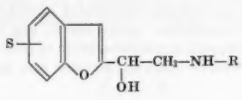
Filed Apr. 10, 1972, Ser. No. 242,808

Claims priority, application Great Britain, Apr. 20, 1971, 10043/71

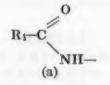
Int. Cl. C07d *5/40*

U.S. Cl. 260—240 J **27 Claims**

1. A compound of the formula



wherein R represents an isopropyl, isobutyl, secbutyl or tert-butyl group and S represents a group of the formula



(a)

or

b. $R_2—SO_2—NH—$

in which R_1 represents a lower alkyl, lower alkenyl, lower alkadienyl, lower alkynyl, lower cycloalkyl, lower cycloalkyl-lower alkyl, aryl, aryl-lower alkyl, aryl-lower alkenyl or aryl-lower alkynyl group and R_2 represents a lower alkyl, lower alkenyl or aryl group, wherein the term aryl when used alone or in combination means phenyl or phenyl substituted with one or more halo, nitro, lower alkyl or lower alkoxy groups and acid addition salts thereof.

3,859,280
2-SUBSTITUTED-4,5,6-TETRAHYDROBENZOTHIAZOLE-4-CARBOXYLIC ACIDS AND THEIR ALKYL ESTERS

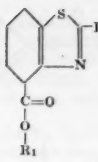
Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 125,413, March 17, 1971, Pat. No. 3,694,450. This application May 31, 1972, Ser. No. 258,317

Int. Cl. C07d *91/46*

U.S. Cl. 260—240 G **2 Claims**

1. A compound of the formula:



wherein

R_1 is selected from the group consisting of hydrogen and (lower)alkyl;

R_2 is selected from the group consisting of hydrazino, benzylidenehydrazino, halobenzylidenehydrazino, nitrobenzylidenehydrazino; and

the pharmaceutically acceptable salts thereof.

3,859,281
2,6-DICHLOROBENZYLIDENEHYDRAZIDES

William F. Bruce, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 159,056, July 1, 1971, Pat. No. 3,746,703. This application Jan. 26, 1973, Ser. No. 326,727

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 G **2 Claims**

1. The compound which is:

2,6-dichlorobenzylidene 1,2,3,6-tetrahydro-1,3-dimethyl-2,6-dioxopurine-7-acetic acid hydrazide.

2. The compound which is:

2,6-dichlorobenzylidene indole-3-acetic acid hydrazide.

3,859,282
PROCESS FOR PREPARING 3-SUBSTITUTED METHYL--ACYLAMIDO-7-METHOXY-2-CEPHEM-4-CARBOXYLIC ACID AND ITS ESTERS

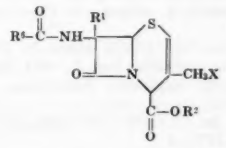
Theresa Y. Cheng, Newark; Sandor Karady, Elizabeth; Seemon H. Pines, Murray Hill, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed July 14, 1971, Ser. No. 162,703

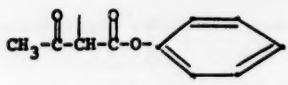
Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **6 Claims**

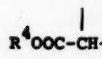
1. A process for preparing a compound of the formula:



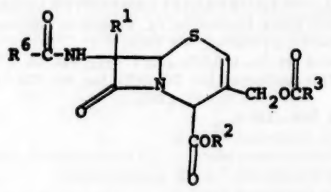
wherein R^6 is benzyl, p-hydroxybenzyl, α-aminobenzyl, α-carboxybenzyl, α-azidobenzyl, allylthiomethyl, butylmercaptomethyl, D-(or L)-4-amino-4-carboxybutyl, α-chloro-n-heptyl, ethyl, 3- or 5-nitrobenzyl, phenethyl, β,β-diphenethyl, thiophene, thiophenoxy, 2-thienylmethyl, α-amino-2-thienylmethyl, α-methylaminobenzyl, α-(N-methylsulfamyl)benzyl, D(-)-α-guanidino-2-thienylmethyl, D(-)-α-guanidinobenzyl, 4-guanidinophenoxymethyl, 4-quanidinomethylbenzyl, cyanomethyl, 2,6-dimethoxy-4-quanidinophenyl, 2- or 3-furylmethyl, 1-H-tetrazol-1-ylmethyl, R^1 is methoxy or hydrogen; X is chloro, bromo, iodo, azido, propionyloxy, butyryloxy, benzoyloxy, 4-hydroxyphenyl; 2,4-dihydroxyphenyl, β-dicarbonylmethyl of the formula:



or



wherein R^4 and R^5 are the same or different alkyl radicals selected from the group consisting of methyl, ethyl, n-propyl and n-butyl; R^2 is an easily removable blocking group not reacting with HX selected from the group consisting of trichloroethyl, tert-butyl, benzoylmethyl, p-methoxybenzyl, benzyl and benzhydryl; which comprises bringing in contact in an inert organic solvent selected from the group consisting of methylene chloride, tetrahydrofuran, chloroform, carbon tetrachloride, benzene, hexane and diethyl ether at a temperature range of about −70°C. to 100°C. for 5 minutes to 25 hours a compound of the formula:



wherein R^1, R^2 and R^6 are as defined above and R^3 is amino or methyl with a compound containing an active hydrogen of the formula: HX, wherein X is as defined above wherein when X is other than chloro, bromo or iodo the reaction is carried out in the presence of a non-nucleophilic acid or a Lewis acid selected from the group consisting of perchloric acid, benzenesulfonic acid, sulfuric acid, phosphoric acid, polyphosphoric acid, boron trifluoride, boron trichloride and aluminum chloride.

3,859,283

1 AMINO-4-(4,5 DIALKYL-3-SULFAMOYL-PHENYLAMINO) ANTHRAQUINONE-2-SULFONIC ACIDS

Peter Hindermann, Bottmingen, and Hubert Meindl, Riehen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

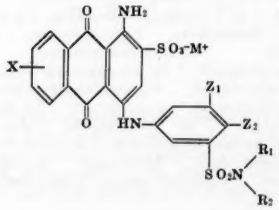
Division of Ser. No. 715,990, March 25, 1968, Pat. No. 3,778,453. This application Sept. 7, 1973, Ser. No. 395,108

Claims priority, application Switzerland, Apr. 5, 1967, 4892/67

Int. Cl. C09b *1/34*; C08b *1/36*

U.S. Cl. 260—247.1 A **2 Claims**

1. A dyestuff of the formula



wherein

M represents hydrogen or an alkali metal,

each of Z_1 and Z_2 independently of each other represents lower alkyl, and

R_1 and R_2 taken together with the nitrogen atom to which they are linked represents a morpholine or piperidine radical.

3,859,284

PRODUCTION OF TRIS(β-HYDROXYALKYL)ISOCYANURATE ALKYLENE OXIDE ADDUCTS

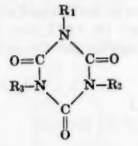
Robert L. Formaini, Millington, and Edwin D. Little, Convent Station, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 738,851, June 21, 1968, abandoned. This application Dec. 23, 1970, Ser. No. 101,130

Int. Cl. C07d *55/38*

U.S. Cl. 260—248 NS **16 Claims**

1. A compound of the formula



wherein R_1 is a hydrogen-terminated oxyalkylene chain of from 2 to 30 oxyalkylene units, and R_2 and R_3 are each a hydrogen-terminated oxyalkylene chain of from 1 to 30 oxyalkylene units, wherein each oxyalkylene unit has the formula

wherein R at each occurrence independently is hydrogen, methyl or ethyl.

3,859,285

10, 11-DIHYDRO-5H-BENZO (4,5) CYCLOHEPTA (1,2-B) PYRAZINES

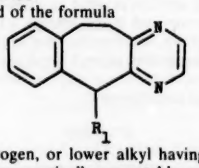
Marcel K. Eberle, Madison, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Nov. 9, 1973, Ser. No. 414,365

Int. Cl. C07d *51/76*

U.S. Cl. 260—250 BC **5 Claims**

1. A compound of the formula



where R_1 is hydrogen, or lower alkyl having 1 to 4 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

3,859,286

BIS-BASIC KETONES OF XANTHENE AND XANTHEN-9-ONE

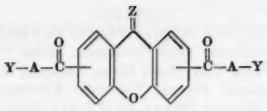
Robert W. Fleming; Arthur D. Sill, and Francis William Sweet, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

Filed Dec. 11, 1970, Ser. No. 97,379

Int. Cl. C07d *87/38*; A61k *27/00*

U.S. Cl. 260—247.5 R **14 Claims**

1. A compound selected from a base of the formula



wherein Z is a member selected from the group consisting of oxygen or H_2; each A is a straight or branched alkylene chain of from 1 to 6 carbon atoms; and each Y is a member selected from the group consisting of

A. the group

wherein R^1 and R^2 are individually selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl of from 3 to 6 carbon atoms and having the vinyl unsaturation in other than the 1-position of the alkenyl group; or

B. the group

wherein *n* is a whole integer from 4 to 6, and R^3 is a member selected from the group consisting of hydrogen or lower alkyl of from 1 to 4 carbon atoms and can be linked to any one of the carbon atoms of the heterocyclic group; or

C. the group

wherein X is a member selected from the group consisting of oxygen or NR^4, and R^4 is hydrogen or lower alkyl of from 1 to 4 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

3,859,287

THIOPTERIDINES AND PROCESS FOR PRODUCING SAME

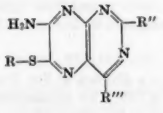
Walter Wesley Parish, 1368 Locust Ln., Provo, Utah 84601, and H. Smith Broadbent, 618 Hard Rd., Webster, N.Y. 14580

Filed May 5, 1971, Ser. No. 140,536

Int. Cl. C07d *57/12*

U.S. Cl. 260—251.5 **16 Claims**

1. A thiopteridine of the structure



wherein R'' and R''' are members selected from the class consisting of amino and acetamido and R is a member selected from the group consisting of lower alkyl, phenyl and a substituted phenyl wherein the substituted group is lower alkyl or halogen.

3,859,288

ARYLPYRIMIDINES - INHIBITORS OF PLATELET AGGREGATION AND BRONCHODILATORS

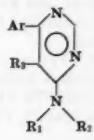
Gerald George DeAngelis, Wilton, and Hans-Jurgen Ernst Hess, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 78,216, Oct. 5, 1970, Pat. No. 3,707,560. This application Sept. 20, 1971, Ser. No. 182,220. The portion of the term of this patent subsequent to Dec. 26, 1989, has been disclaimed.

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 N **3 Claims**

1. A compound selected from those of the formula



and the pharmaceutically acceptable acid addition salts thereof, wherein:

Ar is selected from the group consisting of phenyl; substituted phenyl wherein said substituent is methyl, methoxy, 3,4-dimethoxy, hydroxy, trifluoromethyl, fluorine, chlorine, bromine, carboxy, cyano, nitro, dialkylamino said alkyl containing from 1 to 3 carbon atoms, amino or alkanoylamino of from 1 to 4 carbon atoms; pyridyl; thienyl; furyl; monosubstituted pyridyl, thienyl or furyl wherein said substituent is alkanoylamino containing from 1 to 4 carbon atoms; naphthyl; 3-indolyl; 2- and 3-benzothienyl; and 2- and 3-benzofuryl;

R_1 and R_2 are each ethyl; and

R_3 is alkyl containing from 1 to 3 carbon atoms.

3,859,289

TRICYCLIC PYRIMIDINONES

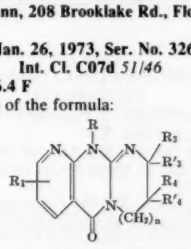
Goetz E. Hardtmann, 208 Brooklake Rd., Florham Park, N.J. 07932

Filed Jan. 26, 1973, Ser. No. 326,850

Int. Cl. C07d *51/46*

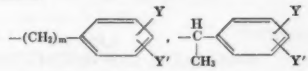
U.S. Cl. 260—256.4 F **35 Claims**

1. A compound of the formula:

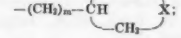


wherein

R is alkyl of one to seven carbon atoms, alkenyl of three to eight carbon atoms,



or



m is 0 to 2,

R_1 is hydrogen, alkyl of one to four carbon atoms or alkoxy of one to three carbon atoms,

n is 0 to 2,

X is a direct bond or $-(CH_2)_p-$,

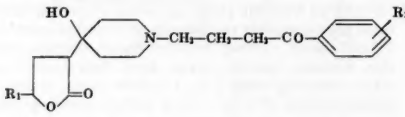
p is 1 to 3,

each of Y and Y' is, independently, hydrogen, halo of atomic weight not greater than 36, i.e., fluoro or chloro, or lower alkyl of one to three carbon atoms, or both are lower alkoxy of one to two carbon atoms, or one is hydrogen and the other

bromo, trifluoromethyl, or lower alkoxy of one to two carbon atoms,
each of R_3, R_3', R_4 and R_4' is hydrogen or alkyl of one to three carbon atoms provided that no more than 3 of R_3, R_3', R_4 and R_4' are alkyl,
or a pharmaceutically acceptable acid addition salt thereof.

3,859,290
3-[1-(4-PHENYL-4-OXOBUTYL)-4-HYDROXY-4-PIPERIDYL]DIHYDRO-2(3H) FURANONES
Anton Ebnother, Arlesheim, and Erwin Rissi, Basel, both of Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basle, Switzerland
Filed Mar. 4, 1971, Ser. No. 121,140
Claims priority, application Switzerland, Mar. 20, 1970, 4259/70; Sept. 2, 1970, 13190/70. The portion of the term of this patent subsequent to June 19, 1990, has been disclaimed.
Int. Cl. C07d *29/24*
U.S. Cl. 260—293.67 **11 Claims**

1. A compound of the formula:



wherein
R_1 is hydrogen or alkyl of one to three carbon atoms, and R_2 is hydrogen, fluorine, chlorine, bromine, alkyl of one to three carbon atoms, alkoxy of one to three carbon atoms, or an alkylamido radical in which the alkyl group is of one to three carbon atoms,
or a pharmaceutically acceptable acid addition salt thereof.

3,859,291
9-(P-ANISIDINO)-7-METHYL-(1H)-PYRAZOLO[3,4-F]QUINOLINE
Homer A. Burch, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.
Filed Oct. 1, 1973, Ser. No. 402,574
Int. Cl. C07d *33/52, 49/18*
U.S. Cl. 260—286 **1 Claim**

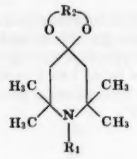
1. The compound 9-(p-anisidino)-7-methyl-(1H)-pyrazolo[3,4-f] quinoline hydrochloride hemihydrate.

3,859,292
N-HALOACYL (2-SPIROCYCLOALIPHATIC) OXAZOLIDINES
Kenneth P. Dorschner, Jacksonville, Fla., and James A. Albright, St. Louis, Mich., assignors to SCM Corporation, Cleveland, Ohio
Filed Aug. 15, 1972, Ser. No. 280,836
Int. Cl. C07d *85/26*
U.S. Cl. 260—293.66 **14 Claims**

1. An N-haloalkanoyl (2-spirocycloaliphatic) oxazolidine wherein said haloalkanoyl contains from 2 to 4 carbon atoms; the 4 and 5 carbon atoms valences of the oxazolidine ring are satisfied by hydrogen atoms or C_{1-6} alkyl groups and said spirocycloaliphatic moiety is cyclopentyl, cyclohexyl, cyclohexenyl or cycloheptyl.

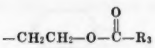
3,859,293
N-SUBSTITUTED SPIRO PIPERIDINE DERIVATIVES
Keisuke Murayama; Syoji Morimura; Takao Yoshioka; Toshimasa Toda; Eiko Mori; Hideo Horiuchi; Susumu Higashida; Katsuaki Matsui; Tomoyuki Korumada; Noriyuki Ohta, and Hisayou Ohsawa, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan
Continuation of Ser. No. 229,203, Feb. 24, 1972, abandoned. This application Sept. 4, 1973, Ser. No. 393,883
Claims priority, application Japan, Nov. 13, 1971, 46-90988
Int. Cl. C07d *99/04*
U.S. Cl. 260—293.58 **10 Claims**

1. A compountl having the formula

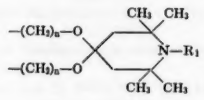


(I)

wherein R_1 represents an alkyl group of 1 – 8 carbon atoms, an alkenyl group of 3 – 5 carbon atoms, an alkynyl group of 3 – 5 carbon atoms, a benzyl group which may be substituted with alkyl of 1 to 3 carbon atoms or halogen, phenethyl group, naphthylmethyl group, β-hydroxyethyl group or a group of the formula



in which R_3 is an alkyl group of 1 to 10 carbon atoms, an alkenyl group of 3 – 5 carbon atoms, phenyl group or naphthyl group; and R_2 represents an alkylene group having 2 or 3 carbon atoms, o-phenylene group or the group of the formula

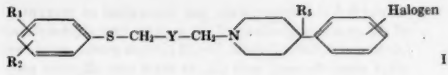


(I-a)

in which R_1 is as defined above and n is an integer of 4 through 6 inclusive.

3,859,294
PIPERIDINE THIOETHERS
Albrecht Edenhofer, Riehen, and Hans Spiegelberg, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.Y.
Division of Ser. No. 237,539, March, 1972, Pat. No. 3,790,583, which is a division of Ser. No. 882,298, Dec. 4, 1969, Pat. No. 3,674,799. This application Oct. 3, 1973, Ser. No. 403,133
Claims priority, application Switzerland, Dec. 24, 1968, 19268/68
Int. Cl. C07d *29/36*
U.S. Cl. 260—293.73 **2 Claims**

1. A compound of the formula



I

wherein R_1 is hydrogen, amino, mono-(lower alkyl)-amino, lower alkanoylamido, p-chlorobenzoyl, N-lower alkyl-lower alkanoylamido, lower alkylsulfonylamido, carbamoyl or ureido; R_2 is hydrogen, halogen, lower alkyl or lower alkoxy; R_5 is hydrogen or hydroxy; and Y is methylene, hydroxymethylene, lower alkanoyloxomethylene, lower alkylsulfonyloxymethylene, phenylsulfonyloxymethylene, lower alkyl phenylsulfonyloxymethylene, or carbonyl,

or a pharmaceutically acceptable acid addition salt thereof.

3,859,295
CERTAIN 2,3,5-TRIHALO-6-METHYL-PYRID-4-YL-ALKANOATES

Ludwig Schroder, Frankbenstr. 7, Ingelheim, Rhein, and Klaus Thomas, Pfarrer-Rudolf-Str. 4, Gau-Algesheim, both of Germany

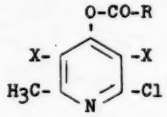
Filed Jan. 26, 1972, Ser. No. 221,070

Claims priority, application Germany, Jan. 27, 1971, 2103728; Dec. 15, 1971, 2162238

Int. Cl. C07d *31/36*

U.S. Cl. 260—295 R **5 Claims**

1. A compound of the formula



wherein

R is alkyl of 1 to 8 carbon atoms, and

X is bromine or iodine.

3,859,296
CERTAIN 3-SUBSTITUTED-N-ALKYL-1,2,4-THIADIAZOLE-5-CARBOXANILIDES

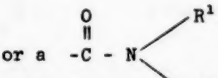
Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 158,995, July 1, 1971, Pat. No. 3,770,749. This application Mar. 29, 1973, Ser. No. 346,363

Int. Cl. C07d *91/32*

U.S. Cl. 260—302 D **3 Claims**

1. A compound of the formula



wherein R is an alkyl group containing from 1 to 8 carbon atoms, inclusive, a haloalkyl group containing from 1 to 8 carbon atoms and from 1 to 3 halogen atoms, aryl containing from 6 to 12 carbon atoms or haloaryl containing from 6 to 12 carbon atoms and from 1 to 5 halogen substituents and R^1 is an alkyl group containing from 1 to 8 carbon atoms and R^2 is phenyl, tolyl, xylyl, naphthyl, mesityl or cumyl.

3,859,297
METHOD FOR PREPARATION OF ORGANIC AZOLYL POLYSULFIDES

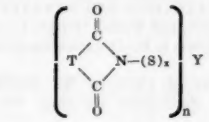
Alfred Bay Sullivan, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 880,893, Nov. 28, 1969, Pat. No. 3,705,923. This application June 26, 1972, Ser. No. 266,458

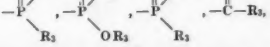
Int. Cl. C07d *91/48*

U.S. Cl. 260—306.5 **19 Claims**

1. A process for the preparation of organic azole polysulfides which comprises reacting a compound $Y'(SH)n'$ with a compound



in which T is alkylene, cycloalkylene, alkenylene, cycloalkenylene, or arylene, and n, n' and x are one or two; when n and n' are one, Y' is azolyl, nuclear substituted azolyl, alkyl, cycloalkyl, aralkyl, alkenyl, aryl or alkaryl, Y is



azolyl or nuclear substituted azolyl or $-R_3$ where R_3 is alkyl, cycloalkyl, aralkyl, alkenyl, aryl, or alkaryl, wherein X is oxygen or sulfur, and at least one of Y and Y' is azolyl or nuclear substituted azolyl in which the substituents are selected from the group consisting of halo, hydroxy, alkoxy, nitro, lower alkyl, acetyl, carboxyl, acetoxy, acetoxyalkyl, phenylcarbamoyl, and pyrimidinyl; when n is two, n' is one, and Y has the same meaning as T and Y' is azolyl or nuclear substituted azolyl as above, when n' is two, n is one and Y' has the same meaning as T and Y is azolyl or nuclear substituted azolyl as above.

3,859,298
MIXED PHOSPHORUS ANHYDRIDES AND PHOSPHORUS AMIDES OF 6-AMINO-PENICILLANIC ACID

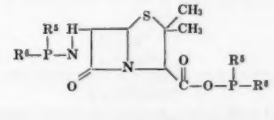
John H. Sellstedt, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 9, 1971, Ser. No. 197,142

Int. Cl. C07d *91/18*

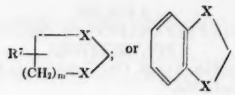
U.S. Cl. 260—307.6 E **3 Claims**

1. A compound having the formula:



wherein:

R^5 and R^6 are selected from the class consisting of (lower-)alkyl, phenyl, naphthyl, phenyl(lower)alkyl and naphthyl(lower)alkyl; and R^5 and R^6 when joined together with phosphorous form the ring



wherein:

X is selected from the class consisting of oxygen CH_2 and sulfur;

R^7 is selected from the class consisting of hydrogen and (lower)alkyl; and m is an integer from 1 to 6.

3,859,299

DIOXAZOLONE ISOCYANATES

Jurgen Hocker, Koeln, and Rudolf Merten, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

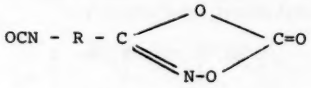
Filed Nov. 15, 1972, Ser. No. 306,784

Claims priority, application Germany, Nov. 26, 1971, 2158740

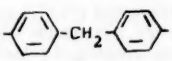
Int. Cl. C07d *85/06*

U.S. Cl. 260—307 A **6 Claims**

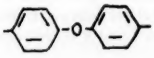
1. An isocyanate of the formula



wherein R is divalent and is selected from the group consisting of C_1 to C_{18} alkyl, phenyl,



and



3,859,300

NITROGEN- AND PHOSPHORUS-CONTAINING COMPOSITIONS

Clark Ober Miller, Willoughby Hill, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

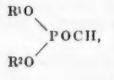
Division of Ser. No. 125,323, March 17, 1971, Pat. No. 3,687,645, which is a continuation-in-part of Ser. No. 757,781, Sept. 5, 1968, abandoned. This application Feb. 14, 1972, Ser. No. 226,316

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **17 Claims**

1. A method for the preparation of a composition of matter which comprises reacting, at a temperature below about 100°C.,

A. at least one compound having the formula



wherein R^1 is an alkyl radical having 8–18 carbon atoms and R^2 is hydrogen or an alkyl radical having 8–18 carbon atoms;

B. about 0.5–0.9 equivalent, per equivalent of reagent A, of at least one polyalkylene polyamine having 2–11 amino groups; and

C. about 0.5–2.0 equivalents, per equivalent of reagent A, of the reaction product of (I) at least one aliphatic carboxylic acid having about 16–30 carbon atoms, or a lower alkyl ester thereof, with (II) at least one alkylene polyamine having 2–11 amino groups and an alkylene oxide having about 2–4 carbon atoms, the amount of said alkylene oxide being about 1–20% by weight of the combination of said carboxylic acid or ester and said alkylene polyamine, or with (III) at least one N-hydroxyalkyl-substituted alkylene polyamine having 2–11 amino groups;

about 0.55–2.5 equivalents of basic nitrogen being present in reagents B and C per equivalent of reagent A.

3,859,301

UREA DERIVATIVES OF 2-IMIDAZOLIDONE

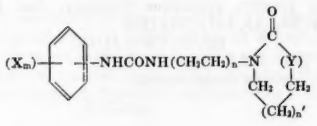
Edward Koon Wah Wat, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 25, 1973, Ser. No. 354,871

Int. Cl. C07d *47/34*

U.S. Cl. 260—309.7 **3 Claims**

1. A compound of the formula



wherein

X = F or OCH_3

Y = NH

m = O, 1 or 2

n = O or 1 n' = O.

3,859,302

PREPARATION OF 2-IMINO-IMIDAZOLE DERIVATIVES

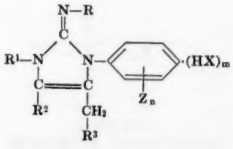
William D. Dixon, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 5, 1973, Ser. No. 329,788

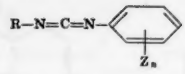
Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **10 Claims**

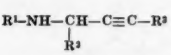
1. A process for preparing a compound within those of the formula



wherein: R is lower alkyl or lower alkoxy lower alkyl; R^1 is lower alkyl; R^2 is lower alkyl or hydrogen; R^3 is lower alkyl or hydrogen; Z is fluoro, chloro, bromo, lower alkyl, halo lower alkyl or lower alkoxy; n is an integer zero through 2; m is zero or 1; and X is an anionic moiety of an acid having a dissociation constant greater than about 5×10^{-2} and which is compatible with the plant growth regulator activity of said compounds; which comprises reacting a carbodiimide of the formula



where R, Z and *n* are as defined above, with an alkynyl amine of the formula



where R^1, R^2 and R^3 are as defined above and, where *m* is 1, treating the resulting product with an acid of the formula

HX

where X is as defined above.

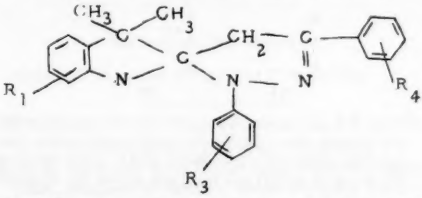
3,859,303

SPIRO(INDOLINE-2,5'-PYRAZOLINE)DERIVATIVES

Harumi Katsuyama, and Hisatake Ono, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 1, 1972, Ser. No. 276,998
Claims priority, application Japan, Aug. 9, 1971, 46-60061
Int. Cl. C07d *57/02*
U.S. Cl. 260—310 D **11 Claims**

1. A spiro-pyrazoline derivative having the formula



wherein R_1 represents hydrogen, halogen, nitro, lower alkyl of from one to three carbon atoms, lower alkoxyl of from one to three carbon atoms or lower alkoxycarbonyl of from one to three carbon atoms; R_2 represents lower alkyl of from one to three carbon atoms; and R_3 and R_4 each represents hydrogen, halogen, or nitro.

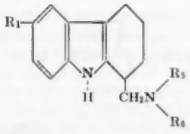
3,859,304

6-HALO-1-AMINOMETHYL-1,2,3,4-TETRAHYDROCARBAZOLES

Philippe Dostert, Basel, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 21, 1972, Ser. No. 317,499
Claims priority, application Switzerland, Dec. 30, 1971, 19237/71
Int. Cl. C07d *27/68*
U.S. Cl. 260—315 **5 Claims**

1. A compound of the formula



wherein R_1 is halogen, R_5 is hydrogen or lower alkyl and R_6 is lower alkyl, or addition salts thereof with pharmaceutically acceptable acids.

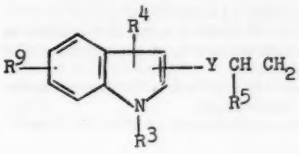
3,859,305

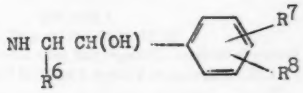
INDOLE AMINOKETONES

Klaus Posselt, Bergen-Enkheim, Germany, and Kurt Thiele, Barcelona, Spain, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 18,300, March 10, 1970, Pat. No. 3,658,845, Division of Ser. No. 693,138, Dec. 26, 1967, Pat. No. 3,514,465. This application Apr. 26, 1971, Ser. No. 137,575
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.15 **14 Claims**

1. A compound having the formula:





their pharmacologically acceptable salts and their pharmacologically acceptable quaternary ammonium salts where R^3 is H or methyl, ethyl R^4 is selected from the group consisting of hydrogen, methyl, phenyl, hydroxyl, and carbethoxy, R^9 is selected from the group consisting of hydrogen, halogen, methoxy, R^5 and R^6 are hydrogen or methyl, R^7 and R^8 are hydrogen, and and Y is selected from the group consisting of —CO— and CH(OH).

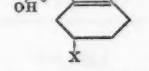
3,859,306

BENZOXEPINE DERIVATIVES

Jules Freedman, 419 Susan Ln., Thiensville, Wis. 53092

Filed Mar. 8, 1973, Ser. No. 339,058
Int. Cl. C07d *9/00*
U.S. Cl. 260—333 **5 Claims**

1. A compound of the formula



in which R is hydrogen or a straight chain or branched alkyl of one to nine carbon atoms, R_1 and R_2 are methyl and X is hydrogen or a lower alkyl of one to four carbon atoms.

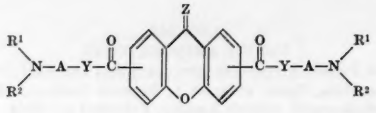
3,859,307

BIS-BASIC ESTERS AND AMIDES OF XANTHENE AND XANTHONE

Albert A. Carr; Robert W. Fleming, and Arthur D. Sill, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

Filed July 14, 1971, Ser. No. 162,716
Int. Cl. C07d *7/42, 7/44*; **A61k** *27/00*
U.S. Cl. 260—335 **8 Claims**

1. A compound of the formula



wherein:

Z is oxygen or H_2; each of R^1 and R^2 is hydrogen, (lower)alkyl, cycloalkyl of 3 to 6 ring carbon atoms, alkenyl of 3 to 6 carbon atoms having the vinyl unsaturation in other than the 1-position of the alkenyl group, or each set of R^1 and R^2 taken together with the nitrogen atom to which they are attached is pyrrolidino, piperidino, N-(lower)alkylpiperazino, or morpholino;

each A is alkylene of 2 to 8 carbon atoms and separates its adjacent Y and amino nitrogen by an alkylene chain of at least 2 carbon atoms;

each Y is oxygen, or N-R wherein R is hydrogen or (lower-)alkyl of 1 to 4 carbon atoms;

or a pharmaceutically acceptable acid addition salt thereof.

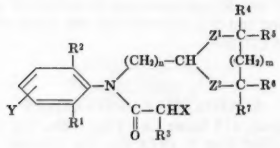
3,859,308

HETEROCYCLIC ANILIDS

Sidney B. Richter, Chicago, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed May 7, 1973, Ser. No. 357,746
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **4 Claims**

1. A compound of the formula



wherein Y is selected from the group consisting of hydrogen, lower alkyl and halogen; R^1 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy; R^2 is lower alkyl; R^3, R^4, R^5, R^6, and R^7 are independently selected from the group consisting of hydrogen and lower alkyl; X is halogen; m is the integer 0 ; Z^1 and Z^2 are oxygen; and *n* is an integer from 1 to 2.

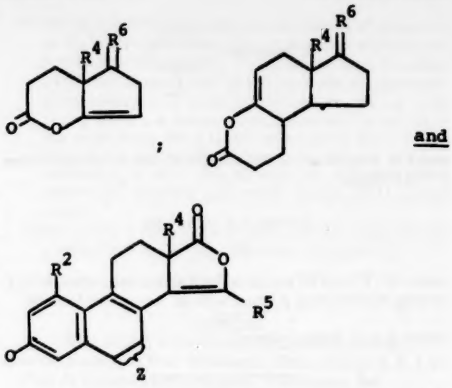
3,859,309

PRODUCTION OF UNSATURATED CARBOCYCLIC KETONES

John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

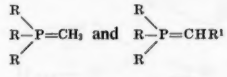
Division of Ser. No. 773,356, Nov. 4, 1968, Pat. No. 3,658,847, which is a continuation-in-part of Ser. No. 747,466, July 25, 1968, abandoned, and a continuation-in-part of Ser. No. 687,477, Dec. 4, 1967, Pat. No. 3,524,886. This application Nov. 16, 1971, Ser. No. 199,389
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **31 Claims**

1. A process for preparing α,β-unsaturated carbocyclic ketones which comprises the step of reacting, under anhydrous conditions, in an organic solvent inert to the reaction, an enol lactone selected from the group having the formulas:



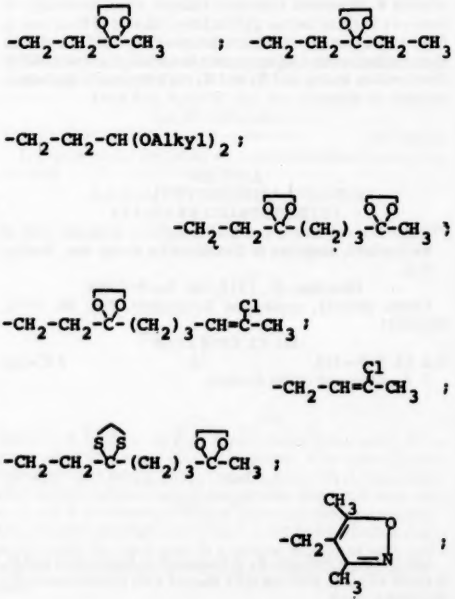
wherein R^2 is hydrogen or lower alkoxy; R^3 is lower alkyl; R^4 is methyl or ethyl; R^5 is hydrogen or methyl; R^6 is oxo or lower alkylenedioxy thereof; or the group

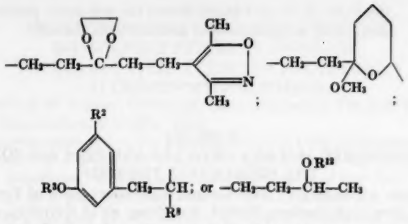
in which R^7 is hydroxy or a carboxylic ester or labile ether thereof; and Z is a carbon to carbon single or double bond; with at least an equal molar amount of a phosphonium ylid selected from the group having the formulas:



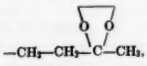
(A) (B)

wherein R is independently selected from the group consisting of lower alkoxy having one to six carbon atoms, phenyl, tolyl, anisyl and chlorophenyl; and R_1 is selected from the group of methyl and the group having the formulas:

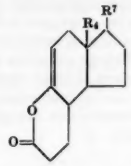




wherein alkyl and R^3 are independently lower alkyl having from one to six carbon atoms; R^2 is hydrogen or lower alkoxy having from one to six carbon atoms; R^8 is hydrogen or methyl and $-OR^{12}$ is a labile ether group; and wherein when said ylid has the formula B wherein R is a carbocyclic radical and R^1 has the formula



then said enol lactone cannot have the formula:



wherein R^4 is methyl or ethyl and R^7 is t-butoxy.

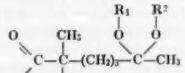
3,859,310

6-OXO-2-METHYLHEPTANAL KETALS

Hans K. Dietl, and Kent C. Brannock, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1972, Ser. No. 283,112
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **5 Claims**

1. A ketal having the formula



wherein R^1 and R^2 are the same or different alkyl having one to 10 carbon atoms, cycloalkyl having five to seven carbon ring structure or phenyl one carbon atom of which has an alkyl having one to five carbon atoms; or R^1 and R^2 taken together are —A— wherein —A— is alkylene having two to four carbon atoms or alkylene having two to four carbon atoms substituted with alkyl having one to five carbon atoms, cycloalkyl having a 5–7 carbon ring structure or phenyl one carbon atom of which is substituted with alkyl having one to five carbon atoms.

3,859,311

PREPARATION OF COUMARINS

Ted Symon, Lombard, and Allen K. Sparks, Des Plaines, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 25, 1972, Ser. No. 229,557
Int. Cl. C07d *7/26*
U.S. Cl. 260—343.2 R **13 Claims**

1. A process for the preparation of a coumarin which comprises reaction of a phenol with acrylic acid or an acrylate in the presence of a catalyst selected from (a) an organic salt of a metal of Group VIII of the Periodic Table, (b) a system consisting of a metal of Group VIII of the Periodic Table or an organic salt thereof and a transition series metal or organic salt thereof, at least one component of said system being in the form of an organic salt, or (c) a system consisting essentially of a metal of Group VIII of the Periodic Table, a transition series metal and an oxygen-containing gas, said process being effected in an acidic solvent medium, the dielectric constant of said solvent being less than 6.15 and recovering said coumarin.

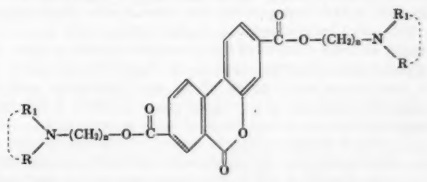
3,859,312

6H-DIBENZO[B,D]PYRAN-6-ONES

Donald R. Meyer, and Arthur D. Sill, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,146
Int. Cl. C07d *7/26*
U.S. Cl. 260—343.2 R **4 Claims**

1. A 6H-dibenzo[b,d]pyran-6-one having the formula:



wherein *n* is an integer of from 2 to 6; R and R_1 are each selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms in which the unsaturation is in a position other than in the 1-position of the alkenyl group, and when R and R_1 are taken together with the nitrogen atom to which they are attached represent the pyrrolidinyl, piperidino or morpholino radical; and the pharmaceutically acceptable acid addition salts thereof.

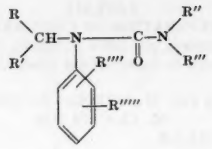
3,859,313

UREA DERIVATIVES OF FURFURYL AND PYRANYLMETHYL COMPOUNDS

Lester L. Maravetz, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed June 20, 1972, Ser. No. 264,696
Int. Cl. C07d *5/14, 7/10*
U.S. Cl. 260—347.3 **6 Claims**

1. A compound of the formula:



wherein R is 2-furyl, 2-tetrahydrofuryl, 3,4-dihydro-2H-2-pyranyl, or 2-tetrahydropyranyl; R′ is hydrogen or C_1—C_3 alkyl; R″ is hydrogen, methyl, or methoxy; R‴ is methyl or methoxy; and R⁗ and R⁗′ are hydrogen, C_1—C_6 alkyl, C_1—C_6 alkoxy, C_1—C_6 alkylthio, C_1—C_6 alkylsulfinyl, C_1—C_6 alkylsulfonyl, chloro, bromo, fluoro, cyano, trifluoromethyl, nitro, phenoxy or halo-substituted phenoxy.

3,859,314

PROCESS FOR PREPARING GLYCIDYL ESTERS OF POLYCARBOXYLIC ACIDS

Clifford F. Dukes, and Robert W. Welch, both of Louisville, Ky., assignors to Celanese Coatings & Specialities Company, New York, N.Y.

Filed June 29, 1967, Ser. No. 649,827
Int. Cl. C07d *1/18*
U.S. Cl. 260—348.6 **11 Claims**

1. A process for producing glycidyl esters of polycarboxylic acids which consists essentially of reacting a polycarboxylic acid with epichlorohydrin using as a catalyst a tertiary amine, tertiary amine salt, or quaternary ammonium compound, wherein at least 2 mols of epichlorohydrin are present for each carboxylic acid group of the polycarboxylic acid, to form the chlorohydrin ester of the polycarboxylic acid and subsequently dehydrohalogenating the chlorohydrin ester with an alkali metal hydroxide in an amount substantially equivalent to the chlorine content of the chlorohydrin ester to form the glycidyl ester, the improvement which consists essentially of:
1. conducting the reaction of the epichlorohydrin and the polycarboxylic acid at a temperature of 150°F to 200°F for a time sufficient to reduce the acid value to zero; and
2. dehydrohalogenating the formed chlorohydrin ester by slow addition of the alkali metal hydroxide at a temperature of 90°F to 130°F and under reduced pressure sufficient to distill and remove the water formed in the reaction at the reaction temperature.

3,859,315

DISUBSTITUTED ACETAMIDOANTHRAQUINONES

Arthur A. Santilli, Havertown; Anthony C. Scoiese, King of Prussia, and Stanley C. Bell, Penn Valley, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,308
Int. Cl. C09b *1/40*
U.S. Cl. 260—377 **4 Claims**

1. A compound selected from the group consisting of:
a. a disubstituted anthraquinone in which one substituent is the 2-(diethylamino)acetamido or 2-(dipropylamino)acetamido group substituted in the 2-postion and the other substituent is the same 2-(diethylamino)acetamido or 2-(dipropylamino)acetamido group substituted in either the 6- or 7-postion; and
b. a disubstituted anthraquinone in which one substituent is the 2-(diethylamino)acetamido or 2-(dipropylamino)acetamido group substituted in in the 1-position and the other substituent is the same 2-(diethylamino)acetamido or 2-(dipropylamino)acetamido group substituted in either the 5-, 6-, 7-, or 8-position; and the non-toxic, pharmacologically acceptable acid addition salts thereof.

3,859,316

EXTRUDED MOLDED ARTICLES AND PROCESS FOR THE PRODUCTION THEREOF

Alois Aignesberger; Hans-Gunter Rosenbauer, both of Trostberg, and Heriberg Hiendl, Straubing, all of Germany, assignors to Suddeutsche Kalkstickstoff-werke AG, Trostberg, Germany and Hifra La Loche S. ar. l, La Loche N.E., Switzerland

Filed Aug. 7, 1970, Ser. No. 62,148
Claims priority, application Germany, Aug. 8, 1969, 1940510
Int. Cl. C08g *51/04*
U.S. Cl. 260—395 B **5 Claims**

1. The process for the production of a finished molded article of a desired shape from inorganic binder and fillers, which process comprises intensively mixing said binder and fillers with from 0.1 to 5% by weight on a solids basis and based on said binder of an aqueous solution of an aminoplast resin containing sulfonic acid groups and based on an acid modified amino-s-triazine containing at least 2 NH_2 groups for a time sufficient to achieve a homogenous mixture, and extruding said mixture through an orifice whereby said article is molded into said desired finished shape by said extrusion through said orifice, said article exhibiting substantially increased flexural and compressive strength in from 1 to 4 days time after said extrusion.

3,859,317

PROCESS OF PREPARING P-BENZOQUINONE

David A. Hutchings, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 28, 1973, Ser. No. 401,723
Int. Cl. C07c *49/64*
U.S. Cl. 260—396 R **7 Claims**

1. A process comprising reacting a solution of phenol in a solvent with free oxygen at a temperature of from 45° C. to 150° C. and a reactor pressure of from 1 to 30 atmospheres in the presence of a catalytic amount of catalyst selected from the group consisting of
bis(salicylidene)ethylenediimino cobalt (II)
bis(salicylidene)orthophenylenediimino cobalt (II)
bis(3-methoxysalicylidene)ethylenediimino cobalt (II)
bis(5-chlorosalicylidene)ethylenediimino cobalt (II)
bis(5-bromosalicylidene)ethylenediimino cobalt (II)
bis(salicylidene)propylene-1,2-diimino cobalt (II)
bis(salicylidene)2-methyl-1,2-diiminopropane cobalt (II)
bis(salicylidene)1,2-diiminocyclohexane cobalt (II)
bis(salicylidene)ethylenediimino manganese (II)
bis(salicylidene)orthophenylenediimino manganese (II)
bis(salicylidene)propylene-1,2-diimino manganese (II)
bis(salicylidene)1,2-diiminocyclohexane manganese (II),
said solvent being selected from the group consisting of (I) alkanols having from 1 to 4 carbon atoms, (II) benzonitrile, (III) hexamethyl phosphoric triamide, (IV) N-alkyl substituted amides selected from the group consisting of N-methyl-2-pyrrolidone
diphenylformamide
dimethylformamide (DMF)
cyclohexylmethylformamide
phenylmethylformamide,
and (V) sulfoxides selected from the group consisting of
dimethylsulfoxide (DMSO)
phenylmethylsulfoxide
cyclohexylmethylsulfoxide.

3,859,318
PRODUCTS PRODUCED BY POST-TREATING OIL-SOLUBLE ESTERS OF MONO- OR POLYCARBOXYLIC ACIDS AND POLYHYDRIC ALCOHOLS WITH EPOXIDES

William M. Lesuer, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 826,015, May 19, 1969, abandoned, which is a division of Ser. No. 712,606, March 13, 1968, abandoned, which is a continuation-in-part of Ser. Nos. 567,052, July 22, 1966, Pat. No. 3,522,179, and Ser. No. 567,320, July 22, 1966, Pat. No. 3,381,022, said Ser. No. 567,052, is a continuation-in-part of Ser. No. 274,905, April 23, 1963, abandoned, said Ser. No. 567,320, is a continuation of Ser. No. 274,905,. This application Feb. 1, 1972, Ser. No. 222,671

Int. Cl. C07c *69/32, 69/40;* **C10m** *3/20*

U.S. Cl. 260—410.6 **19 Claims**

1. An oil-soluble reaction product produced by a process comprising contacting at a temperature of from about 25°C. up to about the decomposition temperature (A) at least one oil-soluble ester of a mono- or polycarboxylic acid and a polyhydric alcohol having at least three hydroxyl groups wherein the carboxylic acid moiety of the ester is characterized by a substantially saturated, aliphatic hydrocarbon radical, which is substantially free of oil-solubilizing pendent groups and has at least about 50 aliphatic carbon atoms exclusive of the carboxyl carbon atoms, and the alcohol moiety contains up to about 40 aliphatic carbon atoms; with (B) at least one organic epoxide having up to about 40 carbon atoms and corresponding to the formula

where each R is independently hydrogen or an aliphatic, cycloaliphatic or aromatic radical; the amount of (A) and (B) in the reaction mixture being such that the ratio of equivalents of alcohol present in the ester to equivalents of epoxide is about 1:0.05 to about 1:5.

3,859,319
CARBOALKOXYLATION OF UNSATURATED COMPOUNDS WITH A PALLADIUM CATALYST CONTAINING BRIDGING PHOSPHIDO GROUPS

Joseph J. Mrowca, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 29, 1972, Ser. No. 293,333

Int. Cl. C07c *67/00*

U.S. Cl. 260—410.6 **20 Claims**

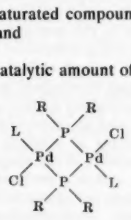
1. A process for making carboxylic ester compounds comprising reacting

an aliphatically unsaturated compound,

carbon monoxide, and

an alcohol

in the presence of a catalytic amount of the catalyst



wherein:

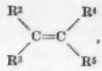
R is lower alkyl or phenyl;

L is a trivalent organophosphorus ligand, R'_3P or R''_2PH;

the R''s, alike or different, are lower alkyl, phenyl or phenyl substituted by one lower alkyl group; and

the R'''s alike or different, are phenyl or phenyl substituted by one lower alkyl group;

the unsaturated compound having up to 30 carbon atoms and being of the formula



, or $R^8—C\equiv C—R^7$,

wherein at least two of R^2, R^3, R^4 and R^5 are hydrogen, R^2 to R^7 are hydrogen or aliphatically saturated substituted or unsubstituted hydrocarbyl radicals, and any two of R^2, R^3, R^4 and R^5 can be joined to form a ring of 3 to 12 carbon atoms, and when more than one unsaturated group is present in the molecule, at least one of R^2 to R^7 will be a common linking radical, said unsaturated compound optionally having up to three substituents selected from aryl, lower alkoxy, lower alkoxycarbonyl, carboxyl, lower acyloxy, cyano, carbamoyl, lower acyl, aroyl, halo and hydroxy, with the proviso that halogen or hydroxyl, if present, be removed by at least 2 carbon atoms from the unsaturation; and

the alcohol having the formula

$$R^9(OH)_m$$

wherein R^9 is a radical of up to 30 carbon atoms derived from a hydrocarbon having at least one aliphatic or alicyclic group and the hydroxy groups are joined to a saturated carbon atom having at least one hydrogen substitutent, and removed from aliphatic unsaturation by at least 2 carbon atoms, and

m is 1 to 6.

3,859,320
FLUORINE-CONTAINING ORGANOSILICON COMPOUNDS

John Heathcote Atherton, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 12, 1973, Ser. No. 339,764

Claims priority, application Great Britain, May 22, 1972, 23888/72

Int. Cl. C07b *7/08, 7/10, 7/18*

U.S. Cl. 260—448.2 N **8 Claims**

1. An organosilicon compound of the general formula:

$$[C_nF_{2n-1}\,R_aC_mH_{2m}\,SiR_b{}^1\,X_cO_{(3-b-c)/2}]_x\,[Z_dH_e\,SiO_{(4-d-e)/2}]_y$$

where R is a divalent group selected from the group consisting of oxygen, alkylene groups having not more than 8 carbon atoms, polyoxyalkylene diol residues, phenyleneoxy groups and phenyleneoxy groups containing substituents selected from the group consisting of lower alkyl and alkoxy groups and halogen atoms and in the case where R is a phenyleneoxy or a substituted phenyleneoxy group, the group R being optionally linked to the group C_mH_{2m} via a group selected from the group consisting of sulphonamido and carboxyl groups, R^1 is selected from the group consisting of methyl and phenyl groups, X is selected from the group consisting of halogen atoms, lower alkoxy groups, substituted lower alkoxy groups and polyoxyalkylene groups, Z is selected from the group consisting of lower alkyl groups and phenol, *a* is 0 or 1, *b* is 0, 1 or 2, *c* is 0, 1, 2, or 3, $b + c$ is not greater than 3, *d* is 0, 1, 2, or 3, *e* is 0 or 1 and $d + e$ is not greater than 3, *n* is 8, 10, or 12, *m* is 2, 3 or 4, *x* is a positive integer, when $b + c$ is 3, *y* is 0, and when $b + c$ is not greater than 2, *y* is a positive integer.

3,859,321
POLYSILOXANE COMPOSITION USEFUL AS A BRAKE FLUID

Frank J. Traver, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

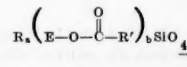
Filed Mar. 17, 1971, Ser. No. 125,398

Int. Cl. C07f *7/08*

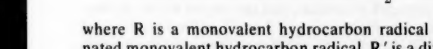
U.S. Cl. 260—448.2 B **6 Claims**

1. A process for transmitting force in a hydraulic brake system of a vehicle having activating means, activated means, master reservoir means, and hydraulic line means connecting

said activating means, said activated means and said reservoir means comprising applying mechanical force to said activating means wherein said activating means, said activated means, said master reservoir means and said hydraulic line means are substantially filled with a polysiloxane polymer having a structure,



where R is a monovalent hydrocarbon radical or a halogenated monovalent hydrocarbon radical, R′ is a divalent hydrocarbon radical, E is selected from the group consisting of



where R^s is a polyvalent hydrocarbon radical having s number of hydroxyl groups, where s varies from 2 to 5, n is a whole number that varies from 2 to 4 and z varies from 1 to 4, where a varies from 1.11 to 2.02, b varies from 0.023 to 1.00 and the sum of a plus b varies from 2.024 to 3.00.

3,859,322

NOVEL HYDROXY SUBSTITUTED ESTERS OF THIOLSULFONIC ACIDS AND THEIR USE AS MICROBICIDES

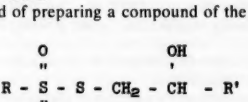
John D. Buckman; John D. Pera, and Fred W. Raths, all of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Continuation of Ser. No. 862,030, Sept. 29, 1969, abandoned. This application July 26, 1973, Ser. No. 383,012

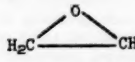
Int. Cl. C07c *143/10, 143/06*

U.S. Cl. 260—453 R **4 Claims**

1. A method of preparing a compound of the formula:



wherein R is an alkyl group containing 1 to 4 carbon atoms or a substituted alkyl group containing 1 to 4 carbon atoms wherein one or more of the hydrogens thereof is replaced by a hydroxyl group, and R′ is an alkyl group containing 1 to 2 carbon atoms which comprises reacting an alkali-metal salt of a thiolsulfonic acid in the presence of an organic acid with an 1,2-epoxide having the formula



wherein R′ is as previously identified and where said salt and said epoxide are used in approximately equal molecular proportions at a temperature varying from 0° to reflux temperature for a period of from 0.5 to 24 hours.

3,859,323

PREPARATION OF 4,4′-METHYLENEBIS (CYCLOHEXYLISOCYANATE)

Maurice E. Bailey, Orchard Park; Richard G. Spaunburgh, Elma, and Raymond B. Davison, Fairport, all of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

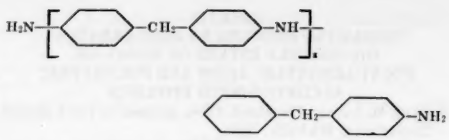
Filed Apr. 2, 1969, Ser. No. 812,870

Int. Cl. C07c *119/04*

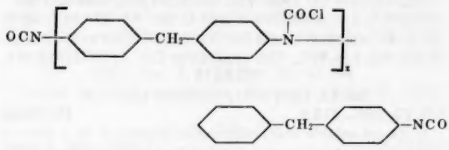
U.S. Cl. 260—453 PH **8 Claims**

1. A process for the preparation of 4,4′-methylenebis(cyclohexylisocyanate) which comprises

A. reacting a secondary amine polyamine residue resulting from the purification of 4,4′-methylenebis (cyclohexylamine), which residue has the formula:



wherein *x* is an integer of from 1 to 3, or a mineral acid salt thereof, with phosgene to convert said amine residue to a carbamoyl chloride isocyanate of the formula:



wherein *x* is as above defined;

B. pyrolyzing said carbamoyl chloride isocyanate by heating at elevated temperature under reduced pressure and

C. recovering 4,4′-methylenebis(cyclohexylisocyanate) therefrom.

3,859,324

PROCESS FOR THE PREPARATION OF ALKALINE SULFATE ESTERS OF N-ALKYL-SUBSTITUTED HYDROXYPOLYALKOXYMETHYLCYCLOHEXENES

Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 3, 1972, Ser. No. 277,835

Int. Cl. C07c *139/10, 141/12*

U.S. Cl. 260—457 **2 Claims**

1. A process for the preparation of a biodegradable detergent which comprises the steps of:

a. condensing butadiene with allyl alcohol in a Diels-Alder reaction at a temperature in the range of from about 50° to about 190°C. and a pressure in the range of from atmospheric to about 100 atmospheres to form hydroxymethylcyclohexene;

b. selectively hydrogenating the hydroxymethylcyclohexene to form hydroxymethylcyclohexane;

c. ring alkylating the resultant hydroxymethylcyclohexane with an 1-alkene in the presence of an organic peroxy free-radical generating compound and hydrogen chloride at a temperature at least as high as the decomposition temperature of said free-radical generating compound,

d. alkoxylating the resulting n-alkyl substituted hydroxymethylcyclohexane with an alkoxylating agent selected from the group consisting of ethylene oxide and propylene oxide at a temperature in the range of from about 20° up to about 125°C. and at a pressure of from about 50 to about 1,000 pounds per square inch to form the resultant n-alkyl-substituted hydroxypolyalkoxymethylcyclohexane;

e. sulfating said n-alkyl-substituted hydroxypolyalkoxymethylcycloheane with a sulfating agent at a temperature of from about 0° to about 60°C. to form the sulfate ester thereof and neutralizing said sulfate ester with a neutralizing agent to form the alkaline sulfate ester of said n-alkyl-substituted hydroxypolyalkoxymethylcycloheane.

3,859,325
PROCESS FOR THE PRODUCTION OF METHACRYLONITRILE

Shigeru Saito, Tokyo; Jun Ishikura; Yutaka Sasaki, both of Yokohama; Kiyoshi Moriya, Kanagawa, and Takashi Imada, Yokohama, all of Japan, assignors to Nitto Chemical Industry, Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1972, Ser. No. 234,345

Claims priority, application Japan, Mar. 21, 1971, 46-13098

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.3 **3 Claims**

1. Process for the production of methacrylonitrile from isobutene which comprises contacting a mixture of isobutene, molecular oxygen and ammonia in the vapor phase at a temperature in the range from 300°C. to 500°C., said mixture having a molar ratio of oxygen/isobutene from 1/1 to 5/1 and a molar ratio of ammonia/isobutene from 1/1 to 5/1, with a catalyst consisting of an oxide composition containing the elements in atomic ratio according to the formula $Fe_{10}W_aX_bMe_cO_d$ wherein X represents at least one element selected from the group consisting of phosphorus, boron and tellurium; Me represents at least one element selected from the group consisting of vanadium and molybdenum; the subscripts denote atomic ratio and have the values:

$a = 1–30$
$b = 0.01–15$
$c = 0.01–5$
$d = 12–143$

and d is a value corresponding to the oxides formed from the above components by combination and is from 12 to 143, wherein said catalyst is produced by intimately mixing at least one compound of each of the respective elements in an aqueous system, heating to dryness and calcining in the present of oxygen at a temperature from about 400° to about 950°C. for 2 to 48 hours.

3,859,326
PROCESS FOR SIMULTANEOUSLY PRODUCING METHACRYLONITRILE AND BUTADIENE BY VAPOR-PHASE CATALYTIC OXIDATION OF MIXED BUTENES

Shigeru Saito, Tokyo; Jun Ishikura, and Yutaka Sasaki, both of Yokohama, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed July 19, 1972, Ser. No. 273,282

Int. Cl. C07c *121/02*, *11/12*

U.S. Cl. 260—465.3 **4 Claims**

1. Process for simultaneously producing methacrylonitrile and butadiene which comprises contacting a mixture of butenes consisting essentially of isobutene and n-butene, oxygen and ammonia in vapor phase at a temperature of from about 350° to 500°C with a catalyst consisting of an oxide composition containing the elements in atomic ratio according to the formula

$$Fe_{10}W_aX_bMe_cO_d$$

wherein X is at least one element selected from the group consisting of phosphorus, boron and tellurium; Me is at least one element selected from the group consisting of vanadium and molybdenum; the subscripts denote atomic ratio and have the values:

$a = 1–30$
$b = 0.01–15$
$c = 0.01–5$;

and d is a value corresponding to the oxides formed from the above components by combination and is from 12 to 143, wherein said catalyst is produced by intimately mixing at least one compound of each of the respective elements in an aqueous system, heating to dryness and calcining at a temperature from about 400° to about 950°C for 2 to 48 hours.

3,859,327
PROCESS FOR RECOVERY OF NICKEL FROM A DEACTIVATED HYDROCYANATION CATALYST

James R. Wells, Orange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 25, 1972, Ser. No. 300,825

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.8 R **6 Claims**

1. In a process of hydrocyanating an ethylenically unsaturated mononitrile of the group consisting of 3-pentene-nitrile and 4-pentenenitrile in the presence of a nickel catalyst consisting essentially of a zerovalent nickel complex of an organic phosphorus compound of the formula PZ_3, wherein PZ_3 is an organic phosphorus compound of the group consisting of triphenyl phosphite, tri(m-tolyl)phosphite, tri(p-tolyl)phosphite and tri(mixed m and p-tolyl)phosphites, and a catalyst promoter, the promoter being a compound containing a cation of a metal of the group consisting of zinc, cadmium, titanium, tin, chromium, iron and cobalt and an anion of the group consisting of chloride, bromide and iodide, anions of lower fatty acids of from 2–7 carbon atoms, HPO_3^{--}, $H_2PO_2^-$, CF_3COO^-, $C_7H_{15}OSO_3^-$ and SO_4^{--}, the amount of promoter being in a mole ratio of about 1:16 to 50:1 in respect to the catalyst, wherein during the process of hydrocyanating a portion of the nickel catalyst becomes degraded; producing a product fluid containing organic dinitriles, unreacted organic mononitriles, organic phosphorus compounds of the formula PZ_3 and zerovalent nickel complexes of PZ_3, residual catalyst promoter and degraded nickel catalyst and separating organic phosphorus compounds of the formula PZ_3 and zerovalent nickel complexes of PZ_3, organic dinitriles and unreacted organic mononitriles from the product fluid and from the degraded nickel catalyst,

the improvement which comprises charging to a reactor the degraded nickel catalyst, an organic nitrile of the group consisting of 3-pentenenitrile, 4-pentenenitrile, adiponitrile, methylglutaronitrile and ethyl succinonitrile in an amount of at least 5 moles of organic nitrile per mole of nickel in the degraded nickel catalyst, an organic phosphorus compound of the formula PZ_3 in amount to provide a PZ_3/nickel mole ratio at least as great as that in the original zerovalent nickel complex of PZ_3, and a finely divided reducing metal of the group consisting of Na, Li, Mg, Ca, Ba, Sr, Ti, V, Fe, Co, Cu, Zn, Cd, Al, Ga, In, Sm, Pb and Th in at least a stoichiometric amount based on the amount of nickel to be reduced, and maintianing the reaction mixture at a temperature in the range of 60°–140°C. to regenerate the zerovalent nickel complex of PZ_3.

3,859,328
18 BETA-GLYCYRRHETINIC ACID AMIDES

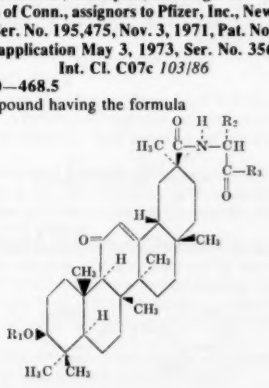
Hans-Jurgen E. Hess, Old Lyme, and Roger P. Nelson, Waterford, both of Conn., assignors to Pfizer, Inc., New York, N.Y.

Division of Ser. No. 195,475, Nov. 3, 1971, Pat. No. 3,766,206. This application May 3, 1973, Ser. No. 356,774

Int. Cl. C07c *103/86*

U.S. Cl. 260—468.5 **6 Claims**

1. A compound having the formula



wherein

R_1 is selected from the group consisting of hydrogen, alkanoyl of from two to six carbon atoms, ω-carboxyalkanoyl of from four to five carbon atoms;

R_2 is selected from the group consisting of benzyl, 4-hydroxybenzyl, 3,4-dihydroxybenzyl, and 3,5-dibromo-4-hydroxybenzyl; and

R_3 is selected from the group consisting of hydroxy and alkoxy of from one to four carbon atoms;

a pharmaceutically-acceptable alkali metal salt of those compounds having at least one carboxy group; or

a pharmaceutically-acceptable acid addition salt of those compounds having a basic group.

3,859,329

PURIFICATION PROCESS

John Eric Lambert, and Charles Henry Vasey, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 16, 1973, Ser. No. 388,965

Claims priority, application Great Britain, Aug. 18, 1972, 38626/72

Int. Cl. C07c *121/10*; C07c *121/26*

U.S. Cl. 260—465.8 R **11 Claims**

1. A process for treating crude adiponitrile containing 2-cyanocyclopenten-(1)-ylamine in amounts arising during the manufacture of crude adiponitrile which comprises adding aqueous formaldehyde thereto in the amount of 0.2 to 2 parts by weight (calculated as 100%) for each part by weight of 2-cyanocyclopenten-(1)-ylamine present in the crude adiponitrile, maintaining the mixture within the temperature range 35° to 200°C until the content of 2-cyanocyclopenten-(1)-ylamine is reduced to below 0.025% by weight and, without first separating the formaldehyde or its reaction products, fractionally distilling the mixture to obtain adiponitrile of improved purity.

3,859,330

ULTRAVIOLET ABSORBING COATING COMPOSITIONS

Stephen Proskow, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 15, 1972, Ser. No. 234,995

Int. Cl. C08f *15/00*

U.S. Cl. 260—47 UA **4 Claims**

1. A polymer consisting essentially of alternating units of a polymer having the formula

$$-CF_2-CFX-$$

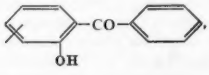
wherein X is F or Cl with units derived from vinyl ether having the formula

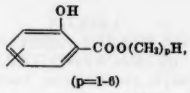
$$-CH_2-\underset{\downarrow}{C}HO(CH_2)_nOH$$

and

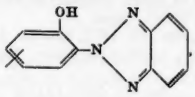
$$-CH_2-\underset{\downarrow}{C}H\left[O(CH_2)_n\right]_mOR$$

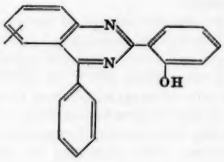
wherein *n* is an integer of 2–6, *m* is 1 or 2 and R is selected from

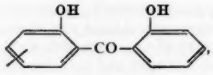


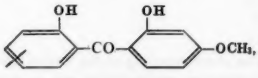


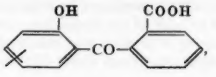
(p=1–6)

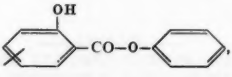


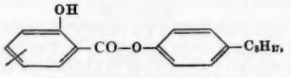


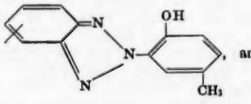




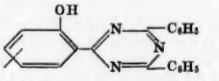








, and



said units being proportioned to provide R groups in an amount of from 5 to 50 percent by weight of said polymer, said polymer having an inherent viscosity measured in 0.1 percent by weight solution in acetone at 25°C of 0.1 to 1.0.

3,859,331

DOPA DERIVATIVES

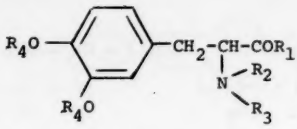
Ado Kaiser, Neu-Frenkendorf; Wolfgang Koch, Riehen; Marcel Scheer, Basel, and Uwe Wolcke, Bottimingen, all of Switzerland, assignors to Hoffman-La Roche, Inc., Nutley, N.J.

Filed Oct. 18, 1971, Ser. No. 190,269

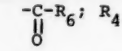
Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **17 Claims**

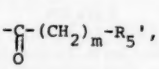
1. A compound of the formula:



wherein R_1 is selected from the group consisting of C_{1-7} alkoxy, C_{2-8} alkenylalkoxy or phenyl C_{1-7} alkoxy; R_2 is hydrogen; R_3 is hydrogen or a substituent containing from 1 to 18 carbon atoms selected from the group consisting of



is a substituent containing from 1 to 18 carbon atoms selected from the group consisting of

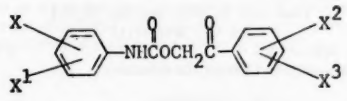


and

R_5' is C_{1-7} alkoxy; R_6 is C_{1-7} alkoxy; and m is an integer from 0 to 15 with the proviso that R_3 and R_4 are different substituents;
and pharmaceutically acceptable salts thereof.

3,859,332
O-(HALOPHENYLCARBAMYL)-N-(HALOPHENYL) GLYCOLAMIDES
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
Filed Apr. 5, 1973, Ser. No. 348,448
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **7 Claims**

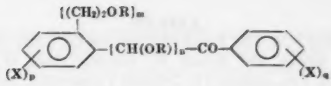
1. The compound having the formula



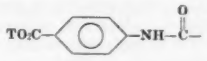
wherein X is chlorine or bromine; X^1 is hydrogen, chlorine or bromine; X^2 is chlorine or bromine; and X^3 is hydrogen, chlorine or bromine.

3,859,333
NOVEL PABA RELEASE COMPOUNDS
Terry L. Burkoth, Palo Alto, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Company, Palo Alto, Calif.
Filed Nov. 1, 1973, Ser. No. 411,997
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **10 Claims**

1. A compound of the formula:



wherein:
m and n are 0 or 1, with $m + n$ equal to 1;
the (X)'s are the same or different and are alkyl or alkoxy of from 1 to 18 carbon atoms and bonded to the ring at other than the ortho position;
p and q are 0 to 2; and
R is of the formula:



wherein:
T is alkyl or substituted alkyl of from 1 to 18 carbon atoms and 0 to 2 heteroatoms, wherein the heteroatoms are of atomic number 7 to 8.

3,859,334
REMOVAL OF FREE FORMALDEHYDE FROM SOLUTIONS OF METHYLOLATED CARBAMATE FINISHING AGENTS
Robert M. Reinhardt, New Orleans, and Russell M. H. Kullman, Metairie, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Division of Ser. No. 248,187, April 27, 1972, Pat. No. 3,723,058. This application Jan. 5, 1973, Ser. No. 321,417
Int. Cl. C07c *125/04*
U.S. Cl. 260—482 C **5 Claims**

1. A process for the removal of free formaldehyde from a solution of methylolated carbamate finishing agent, said process comprising reaction of the free formaldehyde with phthalimide to give an insoluble adduct and separation of the adduct from the solution.

3,859,335
PROCESS FOR OBTAINING ESTERS FROM CYCLOHEXANONE WASTE
Hellmuth Schindlbauer, Maria Ensersdorf Suedstadt; Walter Eichberger, Perchtoldsdorf, and Josef K. Brunner, Wien, all of Austria, assignors to ERZ and Stahl AG, Zurich, Switzerland
Filed June 21, 1973, Ser. No. 372,021
Claims priority, application Austria, June 22, 1972, 5374/72
Int. Cl. C07c *69/66*
U.S. Cl. 260—484 R **18 Claims**

1. A process of obtaining esters from a mixture containing adipic acid, ε-hydroxycaproic acid, and monocarboxylic acids having chain lengths up to at least five carbon atoms, comprising
a. obtaining an acidic salt solution of said mixture,
b. acidifying said salt solution to form an aqueous phase and an organic phase containing the organic acids and separating said phases,
c. esterifying the organic phase with a lower alcohol to form an ester mixture of the corresponding esters of the said organic acid components of said organic phase,
d. separating from said ester mixture, a mixture containing the esters of adipic acid and of ε-hydroxycaproic acid, and
e. extracting with water the ester of ε-hydroxycaproic acid from the said mixture with the adipate.

3,859,336

PROCESS FOR THE PRODUCTION OF GLYCOL ESTERS

Adolfo Aguilo, and Arthur W. Schnizer, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 223,536, Sept. 13, 1962, abandoned. This application Apr. 15, 1966, Ser. No. 542,747

Int. Cl. C07c *67/04*

U.S. Cl. 260—497 A **5 Claims**

1. A process for the preparation of vicinal glycol acetate which comprises passing ethylene and an oxygen-containing gas into intimate contact with a solution containing less than about 20 percent water and consisting essentially of palladium and copper ions derived from their chloride salts, strontium chloride, strontium acetate, and sodium acetate in a solvent containing a major amount of acetic acid at a temperature of about 60° to 80°C at about atmospheric pressure, the system having a potential of at least 400 millivolts, said solution having an acetoxy to chloride ratio of less than about 10 and a chloride to copper ratio of about 1 to 4; and separating vicinal glycol acetate from said solution.

3,859,337

ETHYLENEDIAMINETETRAACETIC ACID ANHYDRIDE DERIVATIVES

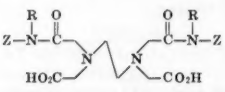
Jack L. Herz, Scarsdale, N.Y., and Stanley Chaberek, Westport, Conn., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 832,430, June 11, 1969, abandoned. This application Apr. 11, 1973, Ser. No. 350,247

Int. Cl. C07c *103/30*; **C23b** *5/18*

U.S. Cl. 260—500.5 H **2 Claims**

1. Ethylenediaminetetraacetic acid anhydride derivatives of the fromulae:



wherein Z is hydroxyl and R is hydrogen, alkyl, aryl, cycloalkyl or cycloalkenyl.

3,859,338

DERIVATIVES OF 4-(4'-BIPHENYLYL)-3-OR-2-BUTENOIC ACID AND SALTS THEREOF

Wolfhard Engel, Mozartstrasse 13; Ernst Seeger, Alpenstrasse 39; Helmut Teufel, Talfeldstrasse 48, and Gunther Engelhardt, Schubertweg 8, all of D-7950 Biberach, Riss, Germany

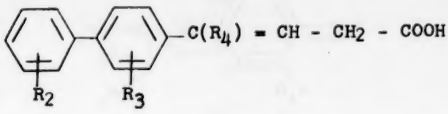
Filed Sept. 14, 1972, Ser. No. 289,008

Claims priority, application Germany, Feb. 8, 1972, 2205732

Int. Cl. C07c *63/00*

U.S. Cl. 260—501.16 **13 Claims**

1. A compound of the formula



wherein

R_2 is halogen, nitro or, when R_3 is halogen, also hydrogen,

R_3 is hydrogen or halogen, and

R_4 is hydrogen, methyl or ethyl,

or a non-toxic salt thereof with a pharmaceutically acceptable inorganic or organic base.

3,859,339

DIALKYL-PHOSPHINYL-ALKANE SULFONATES

Hans-Jerg Kleiner, Bad Soden, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

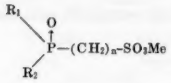
Filed Aug. 1, 1973, Ser. No. 384,425

Claims priority, application Germany, Aug. 3, 1972, 2238221

Int. Cl. C07c *143/02*

U.S. Cl. 260—513 R **8 Claims**

1. Dialkyl-phosphinyl-alkane sulfonates of the formula



wherein R_1 and R_2 signify alkyl groups having from 1 to 4 carbon atoms, n signifies a whole number from 1 to 12 and Me is an alkali metal atom.

3,859,340

α-METHYLFLUORENE-2-ACETIC ACID

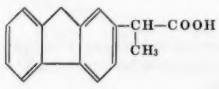
Eric T. Stiller; Seymour D. Levine, both of North Brunswick; Pacifico A. Principe, South River, and Patrick A. Diassi, Westfield, all of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Sept. 9, 1970, Ser. No. 70,913

Int. Cl. C07c *63/52*

U.S. Cl. 260—515 R **1 Claim**

1. The compound having the structure



3,859,341

3,3'DISUBSTITUTED BENZIDINE DERIVATIVES

Nils Ake Jonsson, Sodertalje; Merenyi: Ferenc, and Lars-Erik Westlund, both of Taby, all of Sweden, assignors to A B Kabi, Stockholm, Sweden

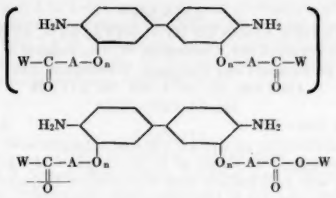
Filed Feb. 24, 1971, Ser. No. 118,531

Claims priority, application Sweden, Mar. 6, 1970, 2976/70

Int. Cl. C07c *101/44*

U.S. Cl. 260—518 R **10 Claims**

1. A 3,3'-disubstituted benzidine derivative selected from (a) those having the general formula



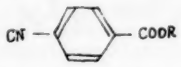
wherein the subscript *n* is zero or one, A is a divalent lower alkylene chain with from 2 to about 7 carbons, W is hydrogen or an alkali metal, and (b) a hydrogen halogenic acid, sulfuric acid, phenylsulfonic acid, toluene sulfonic acid, or naphthalene sulfonic acid addition salt thereof.

3,859,342
PROCESS FOR THE PREPARATION OF P-AMINOMETHYLBENZOIC ACID

Hirokazu Fukumi, Ooimachi; Hirataka Itoh, Tsuruma; Koryo Itoh, and Yutaka Usubuchi, both of Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 27, 1973, Ser. No. 355,048
Int. Cl. C07c *101/42*
U.S. Cl. 260—518 R **12 Claims**

1. A process for preparing p-aminomethylbenzoic acid in one step which comprises reacting an alkyl ester of p-cyanobenzoic acid of the formula,



wherein R represents an alkyl group having one to four carbon atoms, at a temperature of from about 10°C. to 200°C. with hydrogen in the presence of a hydrogenation catalyst in an aqueous medium containing at least one alkaline reagent selected from the group consisting of hydroxides, oxides and carbonates of alkali metals; hydroxides and oxides of alkali earth metals; and ammonia, the amount of said alkaline reagent or ammonia being at least sufficient to provide one gram equivalent of metallic ion or ammonium ion for each mole of said alkyl ester of p-cyanobenzoic acid.

3,859,343
METHOD FOR OXIDIZING HYDROCARBONS

Alvin L. Benham, Clear Lake, Tex.; Dennis E. Drayer, Littleton, Colo., and Harold D. McBride, Lincoln, Nebr., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 408,884, Nov. 4, 1964, Pat. No. 3,560,559. This application Dec. 18, 1970, Ser. No. 99,380The portion of the term of this patent subsequent to Feb. 2, 1988, has been disclaimed.
Int. Cl. C07c *55/14, 63/02*
U.S. Cl. 260—524 M **18 Claims**

1. A method for oxidizing a polyalkyl monoaromatic hydrocarbon feedstock to the corresponding polycarboxylic monoaromatic acid comprising:

a. reacting the feedstock with aqueous ammonium dichromate in an equivalent ratio of from about 0.5:1 to about 3:1 of said ammonium dichromate to oxidizable carbon atoms of said polyalkyl monoaromatic hydrocarbon and at a temperature of from 160°C to 325°C to produce chromic oxide and the ammonium salt of said polycarboxylic monoaromatic acid,

b. reacting the chromic oxide with oxygen in aqueous ammonia to produce aqueous ammonium chromate,

c. removing ammonia from said aqueous ammonium chromate to form aqueous ammonium dichromate, recycling the aqueous ammonium dichromate for the oxidation of additional feedstock, and

d. acidifying the ammonium salt of said polycarboxylic monoaromatic acid to preciptate the acid therefrom.

3,859,344
PROCESS FOR CONTINUOUS PRODUCTION OF HIGHLY PURE TEREPHTHALIC ACID

Motoo Shigeyasu, and Kenzo Kuihara, both of Ehime, Japan, assignors to Maruzen Oil Co. Ltd. and Maksuyama Petrochemicals Inc., both of Osaka, Japan

Filed Apr. 3, 1972, Ser. No. 240,520
Claims priority, application Japan, Apr. 3, 1971, 46-20425
Int. Cl. C07c *63/02*
U.S. Cl. 260—524 R **25 Claims**

1. In a process for the continuous production of highly pure terephthalic acid wherein p-xylene is continuously charged into an oxidation reactor together with a solvent and an oxidation catalyst and oxidized in the liquid phase with molecular oxygen or a molecular oxygen-containing gas, and by means of crystallization terephthalic acid so formed is separated and recovered from the reaction mixture, the improvement which comprises operating the following steps:

a. intermittently withdrawing a portion of the oxidized reaction product from the oxidation reactor,

b. introducing the withdrawn reaction product into a small-sized first crystallizer having a capacity sufficient to contain an amount withdrawn at one time,

c. oxidatively treating the above reaction product in the first crystallizer at a temperature and pressure nearly equal to or below that employed in the preceding oxidation reaction, by introducing molecular oxygen-containing gas for a period of 1–5 minutes at such a rate that the oxygen concentration in the system never exceed the explosive limit during the treatment, and

d. withdrawing the major portion of the reaction product contained in the first crystallizer and passing it to a subsequent second crystallizer and crystallizing terephthalic acid therein.

3,859,345
ACID-CATALYZED DECOMPOSITION OF ALIPHATIC ALCOHOLS

John O. Turner, Shavertown, and Norman C. Deno, State College, both of Pa., assignors to Sun Ventures, Inc., St. Davids, Pa.

Continuation-in-part of Ser. No. 301,048, Oct. 26, 1972, abandoned, which is a division of Ser. No. 98,035, Dec. 14, 1970, abandoned, which is a continuation-in-part of Ser. No. 54,578, July 13, 1970, abandoned. This application Feb. 4, 1974, Ser. No. 438,978
Int. Cl. C07c *51/24*
U.S. Cl. 260—531 R **4 Claims**

1. A process for the preparation of ketones and alcohols which comprises contacting a secondary or tertiary alkyl alcohol having 3 to 12 carbon atoms with a peracid selected from the group consisting of persulfuric acid and the peracid obtained from mixing $K_2S_2O_8$ and H_2SO_4, said peracid having a concentration of not less than about 75 weight percent based on the total weight of the reaction mixture.

4. The process according to claim 1 wherein an excess of acid is employed and there is recovered a product mixture containing ketones, alcohols and acids.

3,859,346

PRODUCTION OF CARBOXYLIC ACIDS

Richard John Camm, and Howard Stanton Green, both of Keyingham, England, assignors to BP Chemicals International Limited, London, England

Filed Sept. 15, 1972, Ser. No. 289,311

Claims priority, application Great Britain, Sept. 15, 1972, 42970/72

Int. Cl. C07c *51/20, 53/08*

U.S. Cl. 260—533 R 9 Claims

1. The process for the production of lower carboxylic acids which comprises oxidizing in the liquid phase a hydrocarbon feedstock comprising at least one paraffin having four to eight carbon atoms in the molecule with molecular oxygen at elevated temperature in the range of about 150° to 250° C in a reactor wherein a manganese compound is fed to the reactor to maintain a manganese content within the reactor within the range 2 to 50 parts per million of manganese based on total weight of reaction mixture in the reactor thereby improving the selectivity of acetic acid based on oxygen reacted.

3,859,347

METHOD OF FORMING GLYOXYLIC ACID SEMICARBAZONE

Daniel H. Deutsch, 1355 Cresthaven Dr., Pasadena, Calif. 91105

Filed June 8, 1972, Ser. No. 261,025

Int. Cl. C07c *33/04*

U.S. Cl. 260—534 R 6 Claims

1. A method of forming glyoxylic acid semicarbazone comprising:

mixing an alkali metal cyanate an aqueous neutral hydrazine solution having a hydrazine concentration of from 1 to 30 weight percent, said cyanate being present in an amount of about 5 to 25 weight percent excess with respect to said hydrazine, and at least one mole equivalent of an acid for each mole of said alkali metal cyanate, reacting the mixture at from 10° to 80° C to form an intermediate semicarbazide in solution,

adding about one mole of glyoxylic acid for each mole of said intermediate semicarbazide to the mixture and holding the resulting mixture at from room temperature to about 100° C whereby the semicarbazone is precipitated.

3,859,348

METHOD OF FORMING GLYOXYLIC ACID SEMI-CARBAZONE

Daniel H. Deutsch, 1355 Cresthaven Dr., Pasadena, Calif. 91105

Division of Ser. No. 261,025, June 8, 1972,. This application Oct. 12, 1973, Ser. No. 405,833

Int. Cl. C07c *133/04*

U.S. Cl. 260—534 R 8 Claims

1. A method of forming glyoxylic acid semicarbazone comprising:

mixing an alkali metal cyanate, an aqueous neutral hydrazine solution having a concentration of hydrazine of from 1 to 30 weight per cent,said cyanate being present in an amount of about 5 to 25 weight per cent excess of an equal molar amount of said hydrazine and at least one mole of an acid for each mole of said cyanate,

reacting the mixture at from 10° to 80° C to form an intermediate semicarbazide in solution,

adding an acid to said intermediate semicarbazide solution in an amount sufficient to bring the pH within the range of 5 to 7, and heating the mixture at from 70°-90° C., under reflux conditions after the chloral has been added.

3,859,349

PURIFICATION OF HYDROXYACETIC ACID

Nicholas Francis Cody, Charleston, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 15, 1973, Ser. No. 332,578

Int. Cl. C07c *59/06*

U.S. Cl. 260—535 R 5 Claims

1. A method for purifying crude hydroxyacetic acid, synthesized by the carbonylation of formaldehyde and water in an organic acid with sulfuric acid as a catalyst, characterized in that the crude acid is decolorized by being contacted with a bed of granulated activated carbon, then sulfuric acid is removed from the crude acid by contacting it with a weak anion exchange resin to absorb the sulfuric acid, and the low-boiling impurities are then removed by live steam stripping at temperatures of 110° to 120° C.

3,859,350

BENZOFURANE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THEIR USE AS OPTICAL BRIGHTENERS

Wilfried Sahm, Kelkheim Taunus; Erich Schinzel, Hofheim Taunus, and Gunter Rosch, Altenhain Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt-/Main, Germany

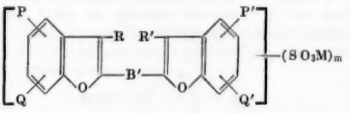
Filed Aug. 10, 1972, Ser. No. 279,531

Claims priority, application Switzerland, Aug. 13, 1971, 11924/71

Int. Cl. C07d *5/32*

U.S. Cl. 260—346.2 R 11 Claims

1. A compound of the formula



in which B′ is a bivalent radical being in conjugation with the adjacent double bonds of the furane nuclei selected from the group consisting of phenylene, biphenylene, terphenylene and naphthylene;

R and R′ which are identical or different, are hydrogen, halogen, lower alkyl, phenyl, or SO_3M;

M is a colorless cation;

P, Q, P′ and Q′ which are identical or different, are hydrogen, halogen, lower alkyl, lower alkoxy, COOM, lower carboalkoxy or cyano and P and Q together or P′ and Q′ together are the same or different bivalent radicals selected from the group consisting of lower alkylene and an annellated benzene nucleus; and *m* is a number of from 0 to 4.

3,859,351

PREPARATION OF LOW MOLECULAR WEIGHT ETHERIFIED METHYLOL UREAS AND THIOUREAS

Karlfried Keller, Bergen-Enkheim; Karl Schnee, Dornigheim, and Dieter Tichy, Frankfurt am (Main)-Fechenheim, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am (Main)-Fechenheim, Germany

Filed July 3, 1972, Ser. No. 268,810

Claims priority, application Germany, July 7, 1971, 2133820

Int. Cl. C07c *127/12*

U.S. Cl. 260—552 R 4 Claims

1. A process for preparing low molecular weight etherified methylol ureas or methylol thioureas of high stability in aqueous solution, said process comprising reacting urea or thiourea with an aqueous formaldehyde solution in a molar ratio of urea or thiourea to formaldehyde of 1:0.8 to 1:1.4 in the

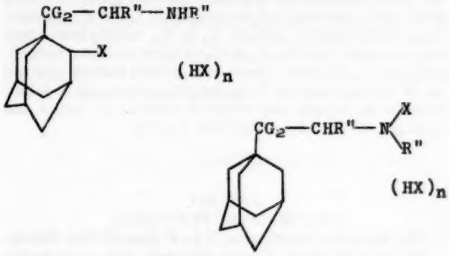
presence of 1 to 8 mol, per mol of urea of thiourea, of methanol or ethanol at a temperature below about 150° C. and at a pH of from 7.5 to 12 obtained by the addition of potassium carbonate until a sample of the reaction mixture no longer displays turbidity when cooled to 0° C.

3,859,352
ADAMANTANE COMPOUNDS

Stephen S. Szinai, Wokingham, England, and William H. W. Lunn, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 197,175, Nov. 9, 1971, abandoned, which is a division of Ser. No. 32,406, April 27, 1970, Pat. No. 3,668,220, which is a division of Ser. No. 675,037, Oct. 13, 1967, Pat. No. 3,591,642. This application Sept. 19, 1973, Ser. No. 398,727
Int. Cl. C07c *87/40*
U.S. Cl. 260—563 P **5 Claims**

1. A compound selected from the group consisting of the compounds of the formulae



wherein each G independently represents hydrogen or straightchain alkyl of from one to six, both inclusive, carbon atoms; each R'' independently represents hydrogen or alkyl of from one to six, both inclusive, carbon atoms, X represents halo; and *n* represents an integer of from 0 to 1, both inclusive.

3,859,353
PROCESS FOR PRODUCING TEREPHTHALOHYDROXIMOYL CHLORIDE

Norman Bilow, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 8, 1973, Ser. No. 414,049
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 A **8 Claims**

1. A method of synthesizing terephthalohydroximoyl chloride by chlorination with chlorine comprising the steps of:

a. forming a solution of terephthalaldehyde dioxime and an organic nitro compound solvent selected from the group consisting of nitrobenzene, nitromethane, nitroethane, nitropropane, nitrobutane, nitropentane, chloronitrobenzene, nitroxylene and nitrotoluene;

b. chlorinating said compound in solution by passing chlorine gas through said solution while maintaining a temperature of less than 48°C; and

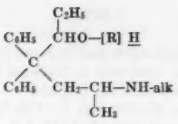
c. recovering said terephthalohydroximoyl chloride.

3,859,354
PREPARATION OF 1-METHYL-3,3-DIPHENYL-4-HYDROXYHEXYLAMINE SALTS AND O-ACYL DERIVATIVES THEREOF

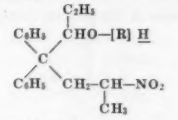
Richard N. Booher, and Albert Pohland, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 26, 1972, Ser. No. 317,969
Int. Cl. C07c *85/00*
U.S. Cl. 260—570 R **4 Claims**

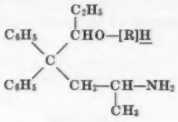
1. The process which comprises oxidizing a compound of the formula



wherein alk is (C_1–C_3) alkyl with permanganate at a neutral pH to produce a compound of the formula;



and then reducing said nitro compound to produce a compound of the formula:

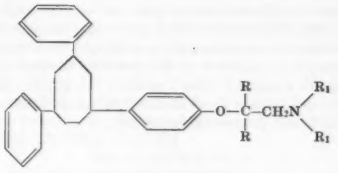


3,859,355
1-P-(ω)-AMINOALKOXY)PHENYL-3,5-DIARYL-CYCLOHEPTANES

Rudolf G. Griot, Riehen, Basel-Stadt, Switzerland, assignor to Sandoz, Inc., Hanover, N.J.

Filed Apr. 9, 1969, Ser. No. 814,822
Int. Cl. C07c *93/06*
U.S. Cl. 260—570.7 **16 Claims**

1. A compound from the group of (A) compounds of the formula:



wherein

each of R is, independently, hydrogen or lower alkyl; and

each of R_1 is, independently, lower alkyl, or both R_1 together form an alkylene bridge of four to five carbon atoms; and

B. an N-oxide of said compounds;

or a pharmaceutically acceptable acid addition salt of (A) and (B), above.

3,859,356
BENZYLIDENE SUBSTITUTED BICYCLIC AND TRICYCLIC COMPOUNDS

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandor-Wander, Inc., Hanover, N.J.

Filed July 24, 1972, Ser. No. 274,310
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.9 **4 Claims**

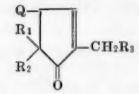
1. The compound which is 5-(o-dimethylaminomethylbenzylidene)-10,11-dihydro-5H-dibenzo[a,d]cycloheptene.

3,859,357
INSECTICIDES

Michael Elliott, Harpenden, and Norman Frank Janes, Luton, both of England, assignors to National Research Development Corporation, London, England

Division of Ser. No. 52,084, July 2, 1970, Pat. No. 3,720,703. This application July 11, 1972, Ser. No. 270,635
Int. Cl. C07c 47/80
U.S. Cl. 260—590 2 Claims

1. Cyclopentenones of the general formula:



wherein Q represents a bromo group, R_1 and R_2, which may be the same or different, each represent hydrogen or an alkyl group containing one to six carbon atoms and R_3 represents a phenyl, halogeno phenyl or lower alkyl phenyl group.

3,859,358
PROCESS FOR THE OXIDATION OF OLEFINS TO UNSATURATED ALDEHYDES

Robert K. Grasselli, Chagrin Falls, and Maria S. Friedrich, Cleveland, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 16,923, March 5, 1970, Pat. No. 3,666,822, which is a continuation of Ser. No. 691,934, Dec. 20, 1967, Pat. No. 3,542,842. This application Dec. 7, 1971, Ser. No. 205,705
Int. Cl. C07c 45/02
U.S. Cl. 260—604 R 3 Claims

1. The process for the oxidation of propylene or isobutylene to form acrolein or methacrolein, respectively, which comprises contacting in the vapor phase at a temperature within the range from about 500° F to about 1,100° F a mixture of a molecular oxygen-containing gas and either propylene or isobutylene, or mixtures thereof, in a molar ratio of oxygen to olefin within the range from 0.5:1 to about 5:1, in the presence of a catalyst composition of the empirical formula $U_xMo_yO_z$ wherein x is a number from 1 to 25; y is a number from 1 to 25; and z is a number taken to satisfy the oxidation state of the elements in the catalyst composition.

3,859,359
COMPOUND AND METHOD

Kestutis A. Keblys, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 32,347, April 27, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 210,149
Int. Cl. C07c 45/08
U.S. Cl. 260—604 HF 19 Claims

1. A process for preparing aldehydes which consists essentially of reacting

a. olefinic organic compounds having two to about 32 carbon atoms and at least one non-aromatic carbon-to-carbon double bond,

b. carbon monoxide, and

c. hydrogen.

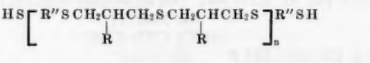
using, as catalysts, preformed compounds having the formula $HRh(CO)[L(OR_1)(OR_2)]_3$ wherein L is selected from P, As, and Sb and R_1, R_2, R_3 are independently selected from the groups consisting of alkyl and aryl, said groups having from one to about 18 carbon atoms, at temperatures ranging from about 0° C. to about 50° C. and at pressures ranging from 1 atmosphere to about 10 atmospheres, and in the absence of excess ligand $L(OR_1)(OR_2)(OR_3)$.

3,859,360
ALLYLIC SULFIDE REACTION PRODUCTS

Alexis A. Oswald, Mountainside; Daniel N. Hall, Linden, and Karl Griesbaum, Elizabeth, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Division of Ser. No. 9,126, Feb. 11, 1970, Pat. No. 3,686,326, which is a continuation of Ser. No. 584,109, Oct. 4, 1966, abandoned. This application Dec. 7, 1971, Ser. No. 205,769. The portion of the term of this patent subsequent to July 13, 1988, has been disclaimed.
Int. Cl. C08d 9/08
U.S. Cl. 260—609 D 7 Claims

1. A polymeric radical type addition product having the general formula



wherein R is selected from the group consisting of hydrogen and methyl radicals, R'' is selected from the group consisting of C_2 to C_{30} divalent alkylene radicals, C_2 to C_{30} divalent unsaturated alkylene radicals, C_8 to C_{30} bis-alkylene substituted aromatic radicals, C_6 to C_{30} divalent aromatic radicals, and C_2 to C_{30} divalent organic hydrocarbon radicals containing an element selected from the group consisting of sulfur, phosphorus, oxygen, and silicon in addition to carbon and hydrogen atoms and n varies from 2 to 50.

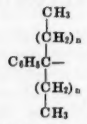
3,859,361
FLUORINATED PEROXIDES

L. Ray Anderson, Morristown, N.J.; William B. Fox, Alexandria, Va.; Charles V. Hardin, Charlotte, N.C., and Charles T. Ratcliffe, Denville, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,072
Int. Cl. C07c 73/00
U.S. Cl. 260—610 R 7 Claims

1. A peroxide having the formula

wherein R is selected from the group consisting of alkyl groups having one to eight carbon atoms and phenylalkyl groups having the formula



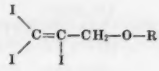
wherein each n is independently 0 to 2; R_f and R_f' are independently perfluoroalkyl groups having the formula $CF_2(CF_2)M$ wherein n is 0 to 5; and M is hydrogen or an alkali metal.

3,859,362
ALKYL-2,3,3-TRIIODOALLYL ETHERS AND PROCESS FOR THEIR PREPARATION AND A COMPOSITION CONTAINING THE SAME

Yasuharu Sekizawa; Shigeo Seki; Bunzo Nomiya, all of Tokyo; Takemi Koeda, Yokohama; Fumio Kai, Fujisawa; Naotoshi Akai, Tokyo; Yasushi Yusa, and Fuguaki Fukuyasu, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,127
Int. Cl. C07c 43/00
U.S. Cl. 260—614 R 5 Claims

1. An alkyl-2,3,3-triiodoallyl ether of the formula



wherein R is an alkyl group selected from the group consisting of methyl, ethyl, *n*-propyl and isopropyl groups.

3,859,363

HALOGENATED 4-(4'-BISPHENYLYL)-BUTANOLS

Helmut Teufel, Tafelostrasse 48; Wolfhard Engel, Mozartstrasse 13; Ernst Seeger, Alpenstrasse 39, and Gunther Engelhardt, Schubertweg 8, all of 7950 Biberach/Riss, Germany

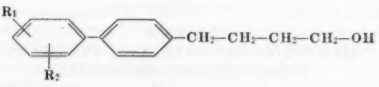
Filed Oct. 10, 1972, Ser. No. 295,880

Claims priority, application Germany, Oct. 15, 1971, 2151311

Int. Cl. C07c *31/14*

U.S. Cl. 260—618 D **2 Claims**

1. A compound of the formula



wherein R_1 is halogen, and
R_2 is hydrogen or halogen.

3,859,364

1,1,3-TRIMETHYL-5-HYDROXYMETHYL-3-(4-HYDROXYMETHYL PHENYL)INDANE

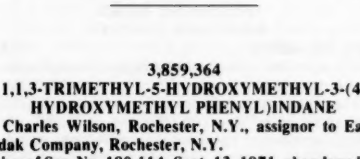
John Charles Wilson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 180,114, Sept. 13, 1971, abandoned. This application Apr. 3, 1973, Ser. No. 347,608

Int. Cl. C07c *35/32*; C08g *17/08*

U.S. Cl. 260—618 F **1 Claim**

1. A compound having the formula



3,859,365

PRODUCTION OF ALKYL-SUBSTITUTED PHENOLS FROM CYCLOHEXENONES

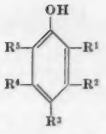
David A. Young, Church Hill, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 19, 1973, Ser. No. 380,919

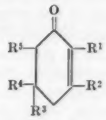
Int. Cl. C07c *37/06*

U.S. Cl. 260—621 H **7 Claims**

1. Process for producing alkyl substituted phenols having the general formula



which comprises reacting an alkyl substituted 2-cyclohexen-1-one having the formula



wherein R^1–R^5 are hydrogen, lower alkyl or phenyl, at least one of R^1–R^5 being a lower alkyl group, in the presence of oxygen, a catalytic amount of cupric chloride, from 0.01 to 2.0 moles of hydrochloric acid and a water compatible organic solvent selected from the group consisting of two and four carbon atom alkanoic acids, two to eight carbon atom alkanols, acetone and dimethylformamide, at a temperature of from 20°C. to 200°C.

3,859,366

2-ALKYL-OCT-5-EN-2-OLS AND THEIR ESTERS

Alfred A. Schleppnik, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 23, 1971, Ser. No. 211,789

Int. Cl. C07c *33/02*

U.S. Cl. 260—632 R **1 Claim**

1. Cis-2-methyl-oct-5-en-2-ol.

3,859,367

PROCESS AND APPARATUS FOR THE PRODUCTION OF GLYCEROL DICHLOROHYDRIN

Hiroaki Yamamoto; Hideo Harada; Hiroshi Miyaoka; Minoru Tanaka; Osamu Kubota; Shizuo Nakamura, and Yasusi Nakamura, all of Tokyo, Japan, assignors to Asahidenka Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 867,635, Oct. 20, 1969, abandoned. This application Jan. 5, 1972, Ser. No. 215,564

Claims priority, application Japan, Oct. 23, 1968, 43-77201; Oct. 23, 1968, 43-77202

Int. Cl. C07c *31/34*

U.S. Cl. 260—633 **2 Claims**

1. A continuous cyclic process for producing glycerol dichlorohydrin by the reaction of (1) allyl chloride solution obtained by dissolving allyl chloride vapor in an aqueous circulating medium, with (2) hypochlorous acid aqueous solution obtained by dissolving chlorine gas in an aqueous circulating medium, in which a circulating aqueous medium is continuously circulated in a reaction system due to the gas lift effect produced by the introduction of chlorine gas and allyl chloride vapor into the circulating aqueous medium, the reaction system having at least two upward flow columns which comprise at least one chlorine dissolving column and at least one allyl chloride dissolving column, a downward flow reaction column connected at its upper and lower ends to the upper and lower ends of the upward flow columns respectively, and in which all reactive contact between allyl chloride and hypochlorous acid takes place between solution (1) and solution (2), said process comprising the following steps:

flowing a portion of the circulating aqueous medium upwardly through said chlorine dissolving column and introducing chlorine gas into the circulating aqueous medium in the lower part of said chlorine dissolving column at a volumetric (m^3) rate, per unit cross-sectional area (m^2) of the chlorine dissolving column, per unit time (hour), in the range of from about 50 m^3/m^2/hour to about 300 m^3/m^2/hour to dissolve completely the introduced chlo-

rine gas in the circulating aqueous medium to produce a hypochlorous acid solution;

flowing the remainder of the circulating aqueous medium upwardly through said allyl chloride dissolving column and introducing allyl chloride vapor into the circulating aqueous medium in the lower part of said allyl chloride dissolving column at a volumetric (m^3) rate, per unit cross-sectional area (m^2) of the allyl chloride dissolving column, per unit time (hour), in the range of from about 50 m^3/m^2/hour to about 300 m^3/m^2/hour to dissolve completely the introduced allyl chloride vapor in the circulating aqueous medium to produce an allyl chloride solution, the rates of introducing chlorine gas and allyl chloride vapor being regulated to maintain the molar ratio of allyl chloride/chlorine added to the aqueous medium between 1.000 and 1.005 to 1.0 and the chlorine gas and allyl chloride vapor being supplied so as to prevent substantial contacting or mixing of allyl chloride vapor bubbles and chlorine gas bubbles;

introducing water into the circulating aqueous medium;

flowing said hypochlorous acid solution and said allyl chloride solution exiting from the upper ends of said upward flow columns into the upper end of said downward flow column and thence downwardly therein to effect mixing and reaction thereof, with the temperature being maintained in the range of from 45°C. to 90°C to produce glycerol dichlorohydrin solution;

withdrawing from the reaction system a part of said glycerol dichlorohydrin solution; and

flowing the remainder of said glycerol dichlorohydrin solution as the circulating aqueous medium to the lower ends of said chlorine dissolving column and said allyl chloride dissolving column.

3,859,368

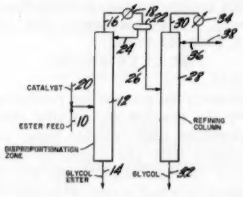
METHOD OF PRODUCING POLYHYDRIC COMPOUNDS SUCH AS ETHYLENE GLYCOL BY DISPROPORTIONATION OF ITS MONOACETATE

John Kollar, Wyckoff, N.J., assignor to Halcon International, Inc., New York, N.Y.

Filed Sept. 8, 1971, Ser. No. 178,588

Int. Cl. C07c *31/18, 31/20*

U.S. Cl. 260—635 R **3 Claims**



1. A process for producing ethylene glycol or propylene glycol from a feed comprising an ester which is the monoformate, the monoacetate or the monopropionate of said glycol which comprises the steps of:

a. introducing said feed into a reaction zone,

b. reacting said feed in said reaction zone at a temperature within the range of room temperature up to about 280°C. with a residence time of 0.25 to 50 minutes in the presence of a basic disproportionation catalyst which is a weak base or a substance which forms a weak base in situ in the presence of said ester, said catalyst being employed in the amount of 0.001 to 5 % by weight based upon said ester in the feed to convert at least some of said ester to ethylene glycol and to ethylene glycol diester or to propylene glycol and to propylene glycol diester, and

c. concurrently recovering said thus-produced ethylene glycol or propylene glycol from said reaction zone by separating it from said feed ester and said produced ester by azeotropic distillation wherein an azeotrope of said ethylene glycol or propylene glycol is removed as overhead distillate.

3,859,369

PROCESS FOR THE PRODUCTION OF 2-METHYL-1,4-BUTANEDIOL

Harry B. Copelin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 166,317, July 26, 1971, abandoned. This application Sept. 11, 1972, Ser. No. 287,665

Int. Cl. C07c *31/18*

U.S. Cl. 260—635 R **10 Claims**

1. A process for the production of 2-methyl-1,4-butanediol which comprises (1) hydroformylating 1,4-butene diol with carbon monoxide and hydrogen at a mole ratio of hydrogen to carbon monoxide of at least 0.1 and at a temperature of from about 50° to about 250°C. and at an elevated pressure of up to 10,000 psig in the presence of a catalytic amount of a hydroformylating catalyst consisting essentially of a phosphine complex of rhodium, cobalt, iridium or ruthenium, and (2) hydrogenating the hydroformylation reaction product using a conventional hydrogenation procedure.

3,859,370

MASSIVE NICKEL CATALYSTS AND USE IN HYDROGENATION PROCESSES

James L. Carter, Chatham, and Wayne G. Custead, Elnora, both of N.Y., assignors to Exxon Research & Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 84,163, Oct. 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 877,001, Nov. 14, 1969, abandoned. This application June 26, 1972, Ser. No. 266,321

Int. Cl. C07c *5/04, 5/10*

U.S. Cl. 260—638 B **7 Claims**

1. A process for hydrogenating organic compounds which comprises contacting the organic compound with hydrogen in the presence of a nickel-silica catalyst having a nickel surface area of about 70 m^2/g to 100 m^2/g and a sodium content of about 0.1 wt. percent based on the total weight of catalyst.

3,859,371

HALOGENATED NORBORNENE - METHANONAPHTHALENE COMPOUNDS

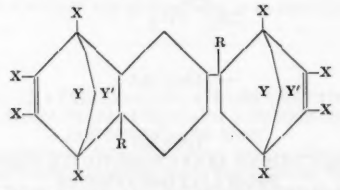
Charles S. Ilardo, Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Sept. 16, 1969, Ser. No. 858,536

Int. Cl. C07c *17/00*

U.S. Cl. 260—648 C **4 Claims**

1. A compound of the formula:



in which X is halogen; Y and Y' are each selected from the group consisting of halogen, lower alkyl, lower alkoxy, halogen substituted lower alkyl and halogen substituted lower alkoxy radicals; and R is selected from the group consisting of hydrogen, lower alkyl, and halogen radicals, wherein said lower alkyl and lower alkoxy range from 1 to 4 carbon atoms each.

3,859,372
PROCESS FOR THE PREPARATION OF ORGANIC FLUORINE COMPOUNDS
Stephen Robota, North Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
Continuation-in-part of Ser. No. 881,912, Dec. 3, 1969, abandoned, which is a continuation-in-part of Ser. No. 809,474, March 17, 1969, abandoned, which is a continuation of Ser. No. 476,673, Aug. 2, 1965, abandoned, Continuation-n-part of Ser. No. 384,518, July 22, 1964, abandoned. This application Aug. 30, 1972, Ser. No. 284,786
Int. Cl. C07c 25/00
U.S. Cl. 260—651 F 7 Claims

1. A process for the production of compounds of the formula

which comprises

1. contacting in liquid phase and, at a temperature from about 0° centigrade to reflux, HCl and HF with a compound of the formula

wherein *n* is from 0 to 5 inclusive, in a molar ratio of HF to organic of from about 0.1:1 to about 3.0:1 for a time sufficient for substantially complete utilization of the HF;
2. feeding the aromatic product of step (1) to a second reactor; and
3. contacting in vapor phase, at a temperature from about 200° to about 500° centigrade and in a mole ratio from about stoichiometric to about 6.0:1, HF with the product of step (2);

wherein steps (1) and (3) are performed in the presence of a coprecipitated metal-aluminum-fluorine catalyst which is characterized as a granular, porous material of high surface area and high structural strength, containing 30 to 60 weight percent of aluminum, 25 to 55 weight percent of fluorine and 0.5 to 35 weight percent of a metal selected from the group consisting of Group IB, IIB, VIB, and VIII of the Periodic Table of Elements, and which is prepared by co-precipitating a metal-alumina composition, from an alkaline solution of alumina, by acidification thereof in the presence of a metal chloride, said metal being selected from the group consisting of Group IB, IIB, VIB and VIII of the Periodic Table of Elements, filtering, washing and drying the co-precipitate, and subsequently fluorinating, at a temperature from about 0° to about 600° centigrade with HF in the presence of an inert diluent gas, until the reaction is completed as indicated by cessation of water evolution.

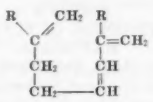
HYDROGEN

3,859,373
MANUFACTURE OF HYDROGEN
Walter H. Seitzer, West Chester, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.
Filed Mar. 7, 1974, Ser. No. 448,847
Int. Cl. C01g 41/00; C01b 1/02, 1/03
U.S. Cl. 423—657 3 Claims

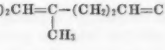
1. A process for the manufacture of hydrogen which comprises contacting tungsten dioxide with steam at a temperature below about 700°C. to produce hydrogen and W_4O_{11}, regenerating tungsten dioxide from said W_4O_{11} by contacting said W_4O_{11} with a reducing gas at a temperature between about 725°C. and 775°C., and again contacting the tungsten dioxide formed with steam in a new cycle to generate hydrogen.

3,859,374
PROCESS FOR THE PRODUCTION OF SQUALENE-TYPE-HYDROCARBONS
Akira Komatsu; Susumu Akutagawa, and Taichi Someya, all of Tokyo, Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan
Division of Ser. No. 362,986, May 23, 1973, Pat. No. 3,801,668. This application Oct. 10, 1973, Ser. No. 405,211
Int. Cl. C07c 11/00, 11/4
U.S. Cl. 260—677 R 3 Claims

1. A squalene-type-hydrocarbon of the formula



where R is $-(CH_2)_2CH=C(CH_3)_2$ or



3,859,375
CHROMIUM MODIFIED MANGANESE FERRITE OXIDATIVE DEHYDROGENATION CATALYSTS
Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
Continuation-in-part of Ser. No. 78,956, Oct. 7, 1970, Pat. No. 3,751,385. This application Sept. 14, 1972, Ser. No. 289,177
Int. Cl. C07c 5/18
U.S. Cl. 260—680 E 3 Claims

1. A process for the oxidative dehydrogenation of C_5 hydrocarbons in vapor phase comprising contacting said hydrocarbons in the presence of oxygen at a temperature of greater than 250° C. with a catalyst consisting essentially of a manganese ferrite containing from 0.05 to 0.4 atom of chromium per atom of manganese.

3,859,376
SEPARATION OF PIPERYLENES
James T. Tazuma, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 18, 1973, Ser. No. 407,699
Int. Cl. C07c 7/10
U.S. Cl. 260—681.5 C 1 Claim

1. A one-step process for selectively removing 1,cis-3-piperylene from 1,trans-3-piperylene by contacting said piperylenes with silver perchlorate or silver nitrate in a solvent solution of ethanol, methanol, 3-methyl-1-butanol or isopropanol or mixtures thereof whereby forming a silver perchlorate. 1,cis-3-piperylene complex or a silver nitrate. 1,cis-3-piperylene complex, separating said complexes and subsequently dissociating said complexes to recover said 1,cis-3-piperylene.

3,859,377
SELECTIVE HYDROGENATION OF C_4 ACETYLENIC HYDROCARBONS
David E. Gross, St. Charles, Mo.; Roland Libers, Dickinson, and Claude W. Smalling, Jr., Alvin, both of Tex., assignors to Monsanto Company, St. Louis, Mo.
Filed Dec. 13, 1973, Ser. No. 424,270
Int. Cl. C07c 7/00
U.S. Cl. 260—681.5 10 Claims

1. A process for the selective hydrogenation of C_4 acetylenes in admixture with butadiene in the liquid phase which comprises reacting said C_4 hydrocarbon mixture with a stream of hydrogen diluted to not more than 50 mole percent hydro-

gen in inert gas in concurrent upflow reaction over a catalyst comprising from 0.01 to 1.0 weight percent palladium impregnated to a depth of at least 0.12 inch on a kieselguhr support having a surface area of from 0.5 to 20 m^2/g and a volume of macropores greater than 700 A in diameter of at least 75% of total pore volume of said support at a temperature of from 50° to 175°F and under a pressure sufficient to maintain the C_4 hydrocarbon mixture substantially in liquid phase.

3,859,378

ANTISTATIC FINISHING OF PLASTIC MOLDING MATERIALS

Richard Hochreuter, Basel, Switzerland, assignor to Sandoz Ltd. a/k/a Sandoz AG, Basel, Switzerland

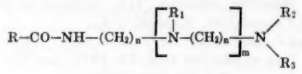
Continuation-in-part of Ser. No. 158,517, June 30, 1971, abandoned. This application Sept. 1, 1971, Ser. No. 177,161

Claims priority, application Switzerland, July 6, 1970, 10181/70

Int. Cl. C08g *20/00*

U.S. Cl. 260—78 S **10 Claims**

1. A composition consisting essentially of a synthetic plastic polymer which is selected from the group consisting of polyamides, polystyrene, polyvinyl chloride, and polyolefins and which has a tendency to accumulate static electricity and, incorporated therein, 0.01 to 5% by weight of the polymer of an antistatic compound of the formula



wherein

R—CO is the acyl radical of a fatty acid of eight to 18 carbon atoms,

R_1, R_2, and R_3 are, independently, hydrogen or lower carboxyalkyl, provided that at least one of R_1, R_2 and R_3 is a lower carboxyalkyl radical of the formula

$$[-(CH_2)_s-COO]_{1\text{-}2}Me,$$

s is 1 or 2,

Me is a monovalent or multivalent metal ion,

m is 1 to 3,

and

n is 3 to 5.

3,859,379

EPOXY COMPOSITION CONTAINING PHENOLIC NOVOLACS TETRA SUBSTITUTED BORATE ANIONS AND A PHOSPHONIUM, ARSONIUM, QUATERNARY AMMONIUM CATION, OR TETRA SUBSTITUTED BORATES OF IMIDAZOLE

Masahiro Kitamura; Hiroshi Suzuki, and Mikio Sato, all of Hitachi, Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

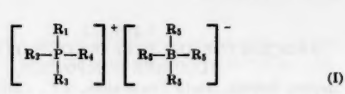
Filed Mar. 18, 1974, Ser. No. 452,137

Claims priority, application Japan, Mar. 19, 1973, 48-31027

Int. Cl. C08g *45/08*

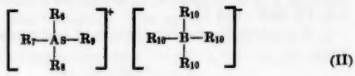
U.S. Cl. 260—831 **8 Claims**

1. An epoxy resin composition consisting essentially of (a) 100 parts by weight of an epoxy resin having at least two vicinal epoxy groups per molecule, (b) 30 to 200 parts by weight of a curing agent consisting of a phenol novolac resin having at least two hydroxyl groups per molecule, and (c) 0.1 to 20 parts by weight of a curing promoter consisting of at least one organoboron compound selected from the group consisting of tetrasubstituted phosphonium-tetra-substituted borates represented by the general formula (I):



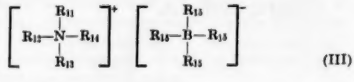
(I)

wherein R_1, R_2, R_3, and R_4 are independently alkyl groups, alkenyl groups, or aryl groups, and R_5 is a phenyl group or a substituted phenyl group; tetra-substituted arsonium-tetra-substituted borates represented by the general formula (II):



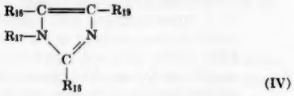
(II)

R_6, R_7, R_8, and R_9 are independently alkyl groups, alkenyl groups, or aryl groups and R_{10} is a phenyl group or a substituted phenyl group; tetra-substituted ammonium-tetra-substituted borates represented by the general formula (III):



(III)

wherein R_{11}, R_{12}, R_{13}, and R_{14} are independently hydrogen atoms, alkyl groups, hydroxyl groups, phenyl groups, or substituted phenyl groups, and R_{15} is a phenyl group or a substituted phenyl group; and tetra-substituted borates of imidazole or tetra-substituted borates of imidazole derivatives formed by reacting alkali metal salts of tetra-substituted borons with imidazole salts or salts of imidazole derivatives obtained by reacting imidazole or imidazole derivatives represented by the general formula (IV):



(IV)

wherein R_{16}, R_{17}, R_{18}, and R_{19}, which may be the same as or different from one another, are selected from the group consisting of hydrogen atom, alkyl groups, alkenyl groups, acyl groups, aryl groups, cycloalkyl groups, cycloalkenyl groups, aldehyde groups, carboxyl group, cyano group, and nitro group with acids.

3,859,380

ANTISTATIC POLYAMIDE FIBER

Lamberto Crescentini, and Rodney Lee Wells, both of Chester, Va., assignors to Allied Chemical Corporation, Morristown, N.J.

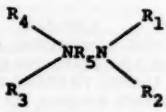
Division of Ser. No. 273,246, July 19, 1972, abandoned. This application Feb. 15, 1974, Ser. No. 443,048

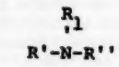
Int. Cl. G08g *41/04*

U.S. Cl. 260—857 PG **10 Claims**

1. In a process for the formation of an antistatic polyamide fiber from a fiber-forming polymer containing about 1 percent to 12 percent by weight of an antistatic compound having a molecular weight above 1,500, said antistatic compound being the reaction product of a compound selected from the group consisting of compounds represented by the formulae:

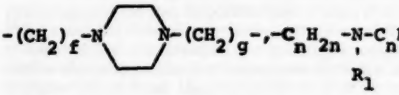
(A)

(B) 

(C) 

where

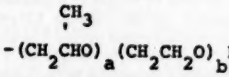
R is at least one of the alkylene difunctional radicals having 3 to 15 carbon atoms and a radical selected from



and

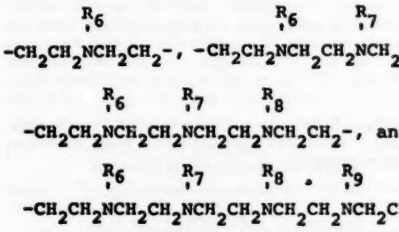
$-(C_rH_{2r}O)_s-(C_pH_{2p}O)_f-C_rH_{2r}-$;

where R', R'', R''' and R'''' are



where R_1, R_2, R_3 and R_4 are independently selected from R' and monovalent hydrocarbon radicals having 1 to 20 carbon atoms derived from aliphatic, aromatic, cycloaliphatic, aromatic-aliphatic, heterocyclic hydrocarbons or $-(C_rH_{2r}O)_m(C_pH_{2p}O)_q-H$;

where R_5 is ethylene radical, R or a divalent radical selected from:



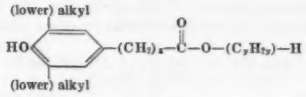
and

R_6, R_7, R_8 and R_9 are independently selected from R_1, R_2, R_3, R_4 or another monovalent hydrocarbon radical having 1 to 20 carbon atoms as defined for R_1, R_2, R_3 and R_4, provided that at least one of R_1, R_2, R_3, R_4, R_5 R_6, R_7, R_8 or R_9 is R';

where n is 3 to 6, r and u are 2, 3, or 4; m, q are 0 to 100; $m + q$ must be >5, w is 2, 3, or 4; p is 2 or 3; f, g, are 0 or 2 to 6; s and t are 0 or a whole number and $s + t$ must be less than 100; a and b are whole numbers; with at least one compound selected from compounds which yield the following divalent radical

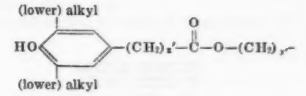
where

R_{10} is a divalent radical having 1 to 20 carbon atoms derived from aliphatic, aromatic, cycloaliphatic, aromatic-aliphatic, or heterocyclic hydrocarbons, by extruding the molten polymer through an orifice into a quenching medium and thereafter stretching the resulting filaments, the improvements comprising dissolving in the extrudate prior to extrusion at least 0.1 percent by weight, based on the weight of the antistatic compound, of a phenol compound selected from the group consisting of:



in which x has a value of from 1 to 6 and y has a value of from 6 to 30; and

in which A is



where x' has a value from 1 to 6 and y' has a value of 1 to 6.

3,859,381

CROSSLINKED POLYURETHANES FROM POLYURETHANE PRECURSORS AND VINYL MONOMERS

Francis Gowland Hutchinson, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 19, 1973, Ser. No. 352,689. The portion of the term of this patent subsequent to Oct. 24, 1989, has been disclaimed.

Int. Cl. C08g *41/04*

U.S. Cl. 260—859 R **10 Claims**

1. In a process for the production of an elastomeric material from a homogeneous composition comprising from 50% to 95% by weight of the precursors of a cross-linked polyurethane and from 50% to 5% by weight of at least one polymerisable ethylenically unsaturated material in which the precursors of the polyurethane are reacted substantially to completion before polymerisation of the ethylenically unsaturated material is allowed to proceed to the extent that the polymer so produced forms a separate phase and in which polymerisation of the ethylenically unsaturated material is thereafter completed, the improvement which comprises using in said process precursors of a cross-linked polyurethane which, when reacted alone in the absence of ethylenically unsaturated material, are capable of forming an amorphous elastomeric cross-linked polyurethane having a glass-rubber transition temperature (Tg) of 25° C or less.

3,859,382

METHOD OF MAKING NYLON CONSTITUENT BLOCK COPOLYMERS OF PREDETERMINED PLIABILITY AT LOW TEMPERATURES

William L. Hergenrother, and Richard J. Ambrose, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

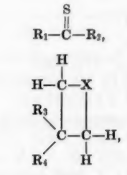
Continuation-in-part of Ser. No. 219,161, Jan. 19, 1972,. This application Jan. 26, 1973, Ser. No. 326,710

Int. Cl. C08g *41/04, 22/02*

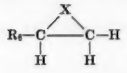
U.S. Cl. 260—859 **10 Claims**

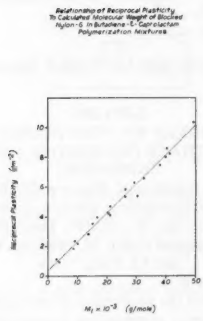
1. A process for producing in a reaction vessel a nylon-base block copolymer composition wherein a selected predeter-

mined pliability of the block copolymer composition at low temperatures corresponds to the molecular weight of the nylon constituent, comprising the steps of: anionically polymerizing monomers selected from the group consisting of olefin, conjugated diene, vinyl substituted aromatic, vinyl substituted pyridine, vinyl substituted quinoline,



and




Relationship of Reciprocal Plasticity To Calculated Molecular Weight of Blocked Nylon-6 in Butadiene-ε-Caprolactam Polymerization Mixtures
Reciprocal Plasticity (m⁻³)
M_n × 10⁻³ (g/mole)

where

R_1, R_2, R_3, R_4, R_5 and R_6 are selected from the group consisting of an aliphatic containing from 1 to 15 carbon atoms, a cycloaliphatic containing from 4 to 15 carbon atoms and an aromatic containing from 6 to 15 carbon atoms; where R_6 is also an H; and where X is O or S,

in the presence of an organo alkali metal initiator to form alkali metal terminated base polymers, rapidly adding a sufficient amount of a compound selected from the group consisting of a polyisocyanate and a polyisothiocyanate and having the formula $R(N{=}C{=}X)n$ where R is an aliphatic group having from 2 to about 20 carbon atoms, a cycloaliphatic group having from 4 to about 20 carbon atoms and an aromatic group having from 6 to about 20 carbon atoms where n is an integer of 2 or 3 and X is either an oxygen or a sulfur atom to said base polymer so that at least 5 percent of said base polymers are end capped by at least one compound selected from said group consisting of a polyisocyanate and a polyisothiocyanate, conducting said polyisocyanate or said polyisothiocyanate end capping step in an environment substantially free from compounds containing active hydrogens at a temperature of from −100°C to +150°C, reacting said end capped base polymer with lactams having from 3 to 16 total carbon atoms to partially form the nylon polymer constituent of the block copolymer, conducing said nylon polymerization step in an environment substantially free from compounds containing active hydrogens at a temperature of from 0°C to 260°C, continuing said nylon polymerization until the molecular weight of the nylon constituent corresponds to a predetermined plasticity, and terminating said nylon polymerization to yield a nylon-base block copolymer composition having the selected predetermined pliability at low temperatures.

3,859,383

GRAFT-POLYMER COMPRISING ACRYLIC RUBBER AND UNSATURATED COMPOUND GRAFTED THERETO AND BLENDS THEREOF WITH PVC

Seikichi Tanno; Hisashi Kohgame, and Tadashi Muroi, all of Hitachi, Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

Filed Sept. 11, 1972, Ser. No. 287,720

Claims priority, application Japan, Sept. 10, 1971, 46-69677; Sept. 10, 1971, 46-69678

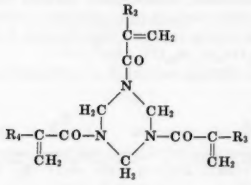
Int. Cl. C08f *29/24*

U.S. Cl. 260—876 R **14 Claims**

1. A polyvinyl chloride resin composition comprising:

a. 100 parts by weight of a polyvinyl chloride resin,

b. 3 to 30 parts by weight of a graft-polymer homogeneously blended with the polyvinyl chloride resin, said graft-polymer comprising 3 to 70 percent by weight based on the weight of said graft copolymer of an acrylic rubber and 97 to 30 percent by weight based on the weight of said graft copolymer of a polymerized monovinyl compound grafted to double bonds in the acrylic rubber, wherein said acrylic rubber is a copolymer comprising 99.95 to 80 percent by weight of a polymerized acrylate ester represented by the formula $CH_2{=}CH{-}COOR_1$, wherein R_1 is an alkyl group having 2 to 8 carbon atoms, and 0.05 to 20 percent by weight of a hexahydro-s-triazine compound represented by the following formula:



wherein R_2 to R_4 are each a member selected from the group consisting of a hydrogen atom and methyl group, each being the same or different.

3,859,384

MULTIPHASE ACRYLIC MODIFIERS FOR VINYL HALIDE POLYMERS

Daniel T. Carty, Willingboro, N.J., and James A. Oline, Wyncote, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 108,177, Jan. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 55,979, July 17, 1970, abandoned. This application Oct. 20, 1972, Ser. No. 299,492

Int. Cl. C08f *15/00*, *19/00*

U.S. Cl. 260—876 R **3 Claims**

1. A composition having superior roll release properties comprising a blend of about 75 to 99.9 weight percent vinyl halide polymer or copolymer of vinyl halide with up to about 20 percent by weight of another monovinylidene compound copolymerizable therewith, and about 0.1 to 25 weight percent of the multiphase acrylic composite polymer comprising 50 to 90 weight percent (A) a first non-crosslinked phase of viscosity average molecular weight of about 7,500 to 50,000 polymerized from a first monomer emulsion of at least 25

weight percent of at least one alkyl acrylate wherein said alkyl group has 1 to 18 carbon atoms, 0 to 75 weight percent of another acrylic monomer and 0 to 75 percent of another copolymerizable ethylenically unsaturated monomer; and 10 to 50 weight percent (B) a final, rigid thermoplastic phase polymerized in the presence of said first phase from an emulsion of about 35 to 100 weight percent of at least one monomer which is methacrylate, acrylate, styrene or substituted styrene, 0 to 65 weight percent of another acrylic monomer and 0 to 65 weight percent of another copolymerizable ethylenically unsaturated monomer, wherein the rigid thermoplastic phase has a viscosity average molecular weight of from about 400,000 to 5×10^6.

3,859,385
EMULSIFIABLE POLYETHYLENE COMPOSITIONS PREPARED FROM THERMALLY DEGRADED LOW MOLECULAR WEIGHT POLYETHYLENE AND CROTONIC ACID

Kenneth R. Mainord, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 20, 1973, Ser. No. 381,132
Int. Cl. C08f *27/00*
U.S. Cl. 260—878 R **8 Claims**

1. An emulsifiable polyethylene wax having an acid number of at least 6 prepared by reacting a thermally degraded polyethylene having a melt viscosity of 225 to 15,000 centipoise at 125°C. with crotonic acid in the presence of an organic peroxide.

3,859,386
EMULSIFIABLE POLYOLEFIN COMPOSITIONS COMPOSITIONS PREPARED FROM THERMALLY DEGRADED LOW MOLECULAR WEIGHT POLYOLEFIN AND CROTONIC ACID

Kenneth R. Mainord, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 20, 1973, Ser. No. 381,133
Int. Cl. C08f *27/00*
U.S. Cl. 260—878 R **11 Claims**

1. An emulsifiable poly-alpha-olefin wax having an acid number of from 6 to 30 and melt viscosity greater than 20 centipoise at 190°C. prepared by reacting a thermally degraded low viscosity poly-alpha-olefin containing at least one alpha olefin monomer having at least three carbon atoms and a melt viscosity of about 20–500 cp. at 190°C. with crotonic acid in the presence of a free radical source.

3,859,387
COPOLYMERIZATION PROCESS

Robert J. Perry, Houston, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 14, 1974, Ser. No. 433,193
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 B **11 Claims**

1. In a process for the copolymerization of propylene and ethylene monomers comprising a first step in which propylene is homopolymerized in the presence of liquid propylene using a two-component catalyst formed by mixing materials comprising (A) a compound having the formula R_nMX_m, wherein R is selected from the group consisting of alkyl, cycloalkyl, and aryl radicals, X is hydrogen or a halide, M is selected from the group consisting of Al, Ga, In, and Tl, *n* is a number from 1 to 3 inclusive, *m* is a number from 0 to 2 inclusive, and the sum of m and n is equal to the valence of the metal M, and (B) a halide of a metal selected from the group consisting of metals of Group IV–A, IV–B, V–B, VI–B and VIII, and a second step in which ethylene is polymerized in the presence of said liquid propylene, and polymer produced in said first step and in the presence of said catalyst, the improvement which comprises commencing said homopolymerization using a catalyst component molar ratio of A to B in the range of 1:1 to 1.3:1, and after approximately 15 to 80 weight percent of the desired total amount of said homopolymer is produced, adding additional component A so as to increase the ratio of A to B to a value in the range of 1.3:1 to 4:1.

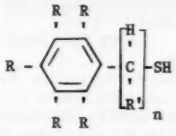
3,859,388
PREPARATION OF NITRILE POLYMERS WITH ARALKYL MERCAPTANS AS POLYMERIZATION MODIFIERS

H. Wayne Hill, Jr., and Charles W. Moberly, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 12, 1973, Ser. No. 378,629
Int. Cl. C08f *15/22, 19/18, 15/38*
U.S. Cl. 260—879 **21 Claims**

1. In a graft polymerization solution polymerization process for preparing a nitrile polymer which comprises polymerizing at least one polymerizable vinylnitrile monomer which is an alpha, beta-olefinically unsaturated nitrile in the presence of at least one unsaturated elastomer characterized as having sufficient unsaturation to be vulcanizable and in the presence of a free radical polymerization initiator under free radical polymerization conditions employing as said molecular weight modifier at least one aralkyl mercaptan characterized as a hydrocarbyl aralkyl mercaptan containing one benzene nucleus as the aromatic ring,

wherein said aralkyl mercaptan is represented by



wherein each R is individually selected from hydrogen or a hydrocarbyl radical such that at least four R groups are hydrogen, R′ is hydrogen, methyl, or ethyl, and *n* is an integer of 1 or 2,

wherein said process employs said vinylnitrile and said unsaturated rubber in proportions sufficient such that said nitrile polymer contains about 18 to 95 weight percent derived from said polymerizable vinylnitrile monomer and about 5 to 50 weight percent derived from said unsaturated elastomer, and wherein said process can employ an olefinically unsaturated monomer which is vinylidine or substituted-vinylidine group containing monomer other than said alpha,beta-unsaturated nitrile and copolymerizable with said alpha,beta-unsaturated nitrile, such that the resulting nitrile polymer contains 0 to 75 weight percent derived from said olefinically unsaturated monomer.

3,859,389
MULTIPHASE ACRYLIC MODIFIERS FOR VINYL HALIDE POLYMERS

Daniel T. Carty, Willingboro, N.J., and James A. Oline, Wyncote, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 299,492, Oct. 20, 1972, , which is a continuation of Ser. No. 108,177, Jan. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 55,979, July 17, 1970, abandoned. This application Dec. 20, 1973, Ser. No. 426,973
Int. Cl. C08f *15/00, 19/00*
U.S. Cl. 260—885 **5 Claims**

1. A multiphase acrylic composite polymer comprising 50 to 90 weight percent (A) a first non-crosslinked phase of viscosity average molecular weight of about 7,500 to 50,000 polymerized from a first monomer emulsion of at least 25 weight percent of at least one alkyl acrylate wherein said alkyl

group has 1 to 18 carbon atoms, 0 to 75 weight percent of another acrylic monomer and 0 to 75 percent of another copolymerizable ethylenically unsaturated monomer; and 10 to 50 weight percent (B) a final, rigid thermoplastic phase polymerized in the presence of said first phase from an emulsion of about 35 to 100 weight percent of at least one monomer which is methacrylate, acrylate, styrene or substituted styrene, 0 to 65 weight percent of another copolymerizable ethylenically unsaturated monomer; wherein the rigid thermoplastic phase has a viscosity average molecular weight of from about 4×10^5 to 5×10^6.

3,859,390
HIGHLY FLAME-RETARDANT SHAPED ARTICLES COMPRISING A HALOGEN CONTAINING POLYMER AND POLYVINYL ALCOHOL

Tadashi Tsuji, Yatsushiroshi, Japan, and Mikio Korematsu, deceased, late of Yatsushiroshi, Japan, assignors to Kabushiki Kaisha Kohjin, Tokyo, Japan, by said Etsuko Korematsu

Filed Apr. 10, 1972, Ser. No. 242,745
Claims priority, application Japan, Jan. 29, 1970, 45-7342; Feb. 3, 1970, 45-8965
Int. Cl. C08f *29/24*
U.S. Cl. 260—899 **12 Claims**

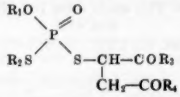
1. Shaped articles having durable, highly flame-retardant properties which comprise a chlorine-containing polymer and polyvinyl alcohol or partially acetalized polyvinyl alcohol, as principal constituents, in a weight ratio of 2:8 and 8:2 and 0.1 to 15 percent of tin substantially in the form of stannic acid based upon the total weight of the above-mentioned principal constituents, said chlorine-containing polymer being a member selected from the group consisting of polymers of vinyl chloride, vinylidene chloride, chloroprene, copolymers of foregoing compounds, copolymers of any of these compounds with other monomers copolymerizable therewith, chlorinated polyvinyl chloride, chlorinated polyethylene, chlorinated polypropylene and polymer-blends of the foregoing polymers.

3,859,391
THIOLPHOSPHORIC ACID ESTERS

Ernest Beriger, Allschwil, Switzerland, assignor to Ciba-Giegy Corporation, Ardsley, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,614
Claims priority, application Switzerland, Apr. 27, 1972, 6265/72; Mar. 15, 1973, 3775/73
Int. Cl. A01n *9/36;* **C07f** *9/16*
U.S. Cl. 260—942 **7 Claims**

1. A thiolphosphoric acid ester of the formula



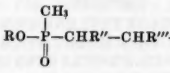
wherein R_1 represents methyl or ethyl, R_2 represents n-pentyl, sec. pentyl or methoxyethyl and R_3 and R_4 each represents methoxy, ethoxy, n-propoxy, isopropoxy or n-hexyloxy.

3,859,392
CARBAMIDO-ALKYL-PHOSPHINIC ACID ALKYL ESTERS

Claus Beermann, Neu-Isenburg, and Martin Reuter, Kronberg/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Germany

Continuation of Ser. No. 67,587, Aug. 27, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 313,811
Claims priority, application Germany, Sept. 13, 1969, 1946574
Int. Cl. C07f *9/32*
U.S. Cl. 260—943 **7 Claims**

1. A compound of the formula



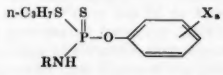
wherein R is alkyl having 1 to 4 carbon atoms; R'' is hydrogen, alkyl having 1 to 4 carbon atoms, phenyl, chlorophenyl, bromophenyl, or lower alkyl phenyl or lower alkoxy phenyl wherein the alkyl groups have 1 to 4 carbon atoms; and R''' is hydrogen or alkyl having 1 to 4 carbon atoms.

3,859,393
O-PHENYL-S-PROPYL-N-ALKYL PHOSPHOROAMIDE DITHIOATES

Shigeo Kishino, Tokyo; Akio Kudamatsu, Kanagawa; Shozo Sumi, Tokyo, and Kozo Shiokawa, Kanagawa, all of Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 3, 1972, Ser. No. 277,827
Claims priority, application Japan, Aug. 11, 1971, 46-60233
Int. Cl. A01n *9/36;* **C07f** *9/18*
U.S. Cl. 260—949 **8 Claims**

1. A dithiophosphoric acid ester amide of the formula



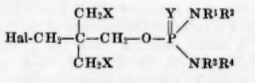
in which
R is lower alkyl
a is 0 to 2, and
X is halogen, lower alkyl or methylmercapto.

3,859,394
HALONEOPENTYL PHOSPHORODIAMIDATE

Patrick Michael Burke, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 25, 1973, Ser. No. 373,146
Int. Cl. C07f *9/24*
U.S. Cl. 260—953 **4 Claims**

1. Compound of the formula



wherein Hal is Cl or Br, X is H, Cl, Br or CH_3, Y is O or S and each of R^1, R^2, R^3 and R^4 independently is H, CH_2OH, CH_2OCH_3 or $CH_2OC_2H_5$.

3,859,395

TRIARYL PHOSPHATE ESTERS

F. Lee Terhune, Westport, Conn., and Gordon A. Rampy, Nitro, W. Va., assignors to FMC Corporation, New York, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,380
Int. Cl. C07f 9/08, 9/12
U.S. Cl. 260—966 2 Claims

1. A triaryl phosphate ester of the formula $(RO)_3PO$ wherein R represents radicals consisting essentially of:

a. at least 90 percent by weight monoisopropylphenyl radicals with the proviso that at least 80 percent by weight are a mixture of meta- and para- monoisopropylphenyl radicals, said mixture containing at least 50 percent to 90 percent by weight meta-isopropylphenyl radicals, based on the weight of said mixture;

b. 0 to 5 percent by weight phenyl radicals; and

c. 5 to 10 percent by weight di- or tri-isopropylphenyl radicals.

3,859,396

PROCESS OF PREPARING THIOPHOSPHATES

Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, Wilmington, Del.

Division of Ser. No. 165,336, July 22, 1971,. This application June 29, 1973, Ser. No. 375,056
Int. Cl. C07f 9/16; C02b 5/06
U.S. Cl. 260—970 4 Claims

1. The process of preparing thiophosphates of the formula

$$(RX)_2\overset{X}{\overset{\|}{P}}-S\,R'$$

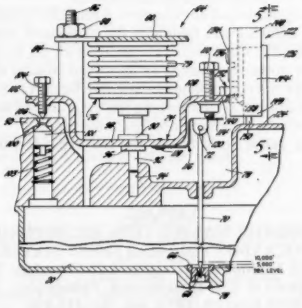
Where X is O or S, R is a hydrocarbon radical and R′ is a 3-thione-propene-1 group or substituted derivative thereof which comprises reacting a dithiolium compound with a phosphite ester under basic conditions.

3,859,397

CARBURETOR ALTITUDE COMPENSATION ASSEMBLY

Dean G. Tryon, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed June 18, 1973, Ser. No. 370,957
Int. Cl. F02m 7/20
U.S. Cl. 261—39 A 6 Claims



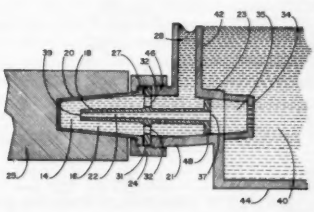
1. A carburetor altitude compensation assembly for use on a carburetor having a main metering system for supplying fuel to a primary carburetor bore through means including a main metering orifice and a power piston operated primary main metering rod wherein the power piston is operative in response to engine manifold vacuum to position the primary main metering rod in a fuel enrichment position as the intake manifold vacuum is reduced in response to increased engine loads comprising: fuel supply means including a supplementary metering orifice disposed in parallel with the main metering orifice, a supplementary metering rod located with respect to said supplementary metering orifice and movable therein to control flow therethrough to bypass a selected amount of fuel around said main metering orifice into the carburetor bore, altitude responsive aneroid means responsive to changes in atmospheric pressure due to changes in altitude, means coupling said aneroid means to said secondary metering rod to decrease bypass fuel flow through said supplementary metering orifice upon a reduction in pressure due to an increase in altitude to compensate for enrichment of air-fuel ratio through a carburetor bore as produced by a decrease in air density due to increases in altitude, lockout means coupled to said aneroid means and movable thereby between first and second control positions, said lockout means being positioned by said aneroid means in its second control position in response to a preset altitude to interlockingly engage the power piston to prevent operation thereof into a fuel enrichment position thereby to prevent enrichment of air fuel mixture because of manifold vacuum reductions due to decreases in atmospheric pressure, and thermally responsive means responsive to temperature of air flow into the carburetor bore for conditioning said lockout means to prevent operation thereof into its second control position for permitting operation of the power piston into a fuel enrichment mode of operation when cold air flows through the inlet of the bore until the carburetor inlet air temperature reaches a predetermined level at which said bimetal means is operated to condition said lockout means to control the power piston in response to altitude pressure changes.

3,859,398

OUTBOARD HEATING DEVICE

Harold R. Havstad, Lakewood, Calif., assignor to Hudson Oxygen Therapy Sales Company, Temecula, Calif.

Filed Oct. 5, 1972, Ser. No. 295,156
Int. Cl. B01f 3/04; A61m 15/00
U.S. Cl. 261—141 3 Claims



1. In a nebulizer having a tube for drawing liquid from a reservoir to a nebulizing chamber, an improved heater assembly comprising:

a. an inner conduit comprising a hollow spool having an inlet port adjacent said reservoir and an outlet port communicating with a heating chamber,

b. an exterior jacket spaced apart from said inner conduit whereby said jacket and conduit cooperate to define said heating chamber therebetween,

c. means communicating with said reservoir for directing liquid therefrom to said conduit inlet port, and

d. a heater surrounding at least a portion of said jacket for providing heat thereto, whereby liquid is drawn from said nebulizer reservoir, through said conduit and into said heating chamber prior to nebulization in said nebulizing chamber.

3,859,399
DENSE COMPOSITE CERAMIC BODIES AND METHOD FOR THEIR PRODUCTION

Wallace O. Bailey, Westland, Mich.; Carl H. McMurtry, Lewiston, and Bruno R. Miccioli, North Tonawanda, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

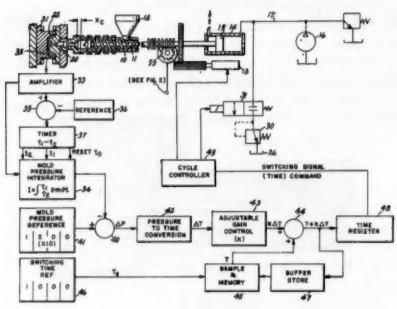
Division of Ser. No. 135,392, April 19, 1971,. This application Sept. 15, 1972, Ser. No. 289,378
Int. Cl. C04b *35/56, 35/58*
U.S. Cl. 264—29 **13 Claims**

1. A method of making a dense, composite ceramic body consisting essentially of from about 2 to about 80 percent titanium diboride, from about 2 to about 70 percent boride carbide, from about 5 to about 30 percent silicon carbide, and from about 3 to about 20 percent free silicon, said method comprising preparing a substantially homogenous initial mixture of granular titanium diboride and granular boron carbide in a proportion of from about 5:95 to about 95:5 and a temporary binder; forming said mixture into a desired shape; setting the binder, if necessary, to obtain a coherent green body; and siliconizing said green body by heating it in contact with silicon to a siliconizing temperature above the melting point of silicon whereby the silicon, in the molten state, infiltrates the body and reacts with some of the boron carbide therein to produce silicon carbide in situ, and said free silicon occupies interstices between said titanium diboride, boron carbide, and silicon carbide.

3,859,400
METHOD FOR INJECTION MOLDING MACHINE AUTOMATIC CONTROL

Carlton Y. W. Ma, Cincinnati, Ohio, assignor to Cincinnati Milacron, Inc., Cincinnati, Ohio

Filed Jan. 11, 1974, Ser. No. 432,677
Int. Cl. B29f *1/06*
U.S. Cl. 264—40 **8 Claims**



1. A method of automatically controlling the cycle of an injection molding machine with a hydraulically operated ram for molding plastics to switch from injection phase to the packing phase by controlling the cylinder pressure on the ram to stop substantially ram advancement and to hold the ram at substantially the same position for the packing phase of the cycle comprising the steps of . . .

measuring mold pressure and producing a signal representative of mold pressure;

comparing such signal with a reference signal that represents a reference mold pressure to produce a correction signal;

adding said correction signal to a switching reference signal that is representative of a referenced switching event of the present cycle to form a switching signal that is representative of the switching event of the next succeeding cycle;

storing said switching signal until said next cycle;

transmitting said stored switching signal during said next cycle to means for controlling ram cylinder pressure;

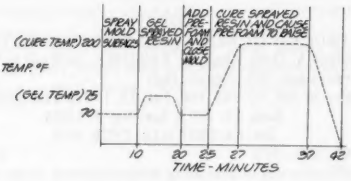
responsive to such transmitting maintaining the ram cylinder pressure substantially constant for a time sufficient to substantially complete the packing phase; and

during said next cycle supplying said switching signal as said switching reference signal.

3,859,401
PROCESS FOR FABRICATING STRUCTURAL PANELS

Francis Gallap, Thousand Oaks, and Reginald V. Tunstall, Oxnard, both of Calif., assignors to Fibre-Thane, Inc., Van Nuys, Calif.

Filed Aug. 9, 1971, Ser. No. 170,224
Int. Cl. B29d *27/00*
U.S. Cl. 264—45.3 P **13 Claims**



1. A process for fabricating a structural laminate comprising:

bringing the surface of a first mold and the surface of a second mold to a predetermined temperature;

covering both surfaces with a gellable, heat curable liquid resin layer;

increasing the temperature of both surfaces to bring the resin layers thereon to a gelled state;

controlling the temperature of both surfaces to prevent a substantially complete curing of the gelled resin layers;

adding a foamable liquid resin directly onto at least a portion of the exposed surface of at least one of the gelled resin layers;

creating a closed chamber by moving the covered surfaces into an opposing position whereby the surfaces are spaced apart a predetermined distance and the edges thereof are in an abutting relationship;

creating a pressurized environment within the closed chamber by allowing the foamable liquid resin to expand in said chamber while in direct contact with the resin layers with the pressure effecting an improved bond at the interface between the expanded foamable liquid resin and the gelled resin layers and forcing the exterior surface of the laminate into a defined configuration; and,

curing the gelled resin layers and the expanded foamable resin.

3,859,402
PROCESS FOR MAKING THIN, MICROPOROUS FLUOROCARBON POLYMER SHEET MATERIAL

Lee I. Bintliff, Levittown, Pa., and Jack C. Sklarchuk, Trenton, N.J., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Nov. 19, 1973, Ser. No. 416,926
Int. Cl. B29d *27/03*
U.S. Cl. 264—49 **12 Claims**

1. A process for making microporous fluorocarbon polymer sheet material which process comprises mixing fluorocarbon polymer particles with particles of a metallic salt pore-former; forming the resultant mixture into a sheet material; and removing said metallic salt pore former, wherein the fluorocarbon polymer particles are selected from the group consisting of polytetrafluoroethylene, polytrifluoroethylene, polyvinyl-

fluoride, polyvinylidenefluoride, polytrifluorochloroethylene and copolymers thereof.

3,859,403

PROCESS FOR SEMICONDUCTIVE CERAMIC BODY

Manfred Kahn, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 13, 1970, Ser. No. 28,143
Int. Cl. C04b 33/32
U.S. Cl. 264—56 3 Claims

1. The method of forming a ceramic semiconductive titanate body having a resistance which rises rapidly with temperature comprising: forming a coherent body of titanate powder containing a dopant, said dopant being a member of the group consisting of niobium pentoxide and lanthanum trioxide in from 0.05 to 0.18 percent by weight of said body; heat treating said body in two stages and at substantially uniform rate within the range of 350°F/hour to 380°F/hour, the first stage being in a first oxygen-containing atmosphere having an oxygen pressure that is equal to or less than that of air under standard conditions, said first oxygen-containing atmosphere having at least 1% by volume of oxygen, at a temperature and for a time sufficient to just achieve full secondary recrystallization, and the second stage being in a second oxygen-containing atmosphere having an oxygen pressure greater than the partial pressure of oxygen in air under standard conditions, at approximately the same temperature as used in said first stage but being within about 2100°F-2800°F and for a time sufficient to attain maximum grain boundary oxidation with a minimum of oxygen diffusion into the lattice as indicated by said body having its most pronounced temperature dependence of resistance; and cooling said body in the same atmosphere as employed in said second heat treating stage at a substantially uniform rate within the range of 200°F/hour to 100°F/hour to at least about 300°F.

3,859,404

DENSIFYING PLASTIC FOAM SCRAP

Richard H. Immel, Sewickley; George M. Dankocsik, Coraopolis, and Eugene V. Galizia, Zelionople, all of Pa., assignors to ARCO Polymers, Inc., Philadelphia, Pa.

Filed Oct. 19, 1972, Ser. No. 299,039
Int. Cl. B29c 23/00
U.S. Cl. 264—89 1 Claim

1. The method of densifying styrene polymer foam scrap materials containing small amounts of residual blowing agent which comprises:

a. subjecting said scrap to steam in a closed vessel at a pressure of 80 to 160 pounds per square inch gage for up to 10 minutes,
b. replacing the steam pressure with air pressure of 80 to 160 pounds per square inch gage for up to 10 minutes.
c. quenching said scrap with a coolant while it remains subject to said air pressure; and
d. removing said scrap from said vessel.

3,859,405

METHODS OF MAKING MOLDED REFRACTORY ARTICLES

Robert A. Horton, Chesterland, Ohio, assignor to Precision Metalsmiths, Inc., Cleveland, Ohio

Division of Ser. No. 117,775, Feb. 22, 1971, Pat. No. 3,769,044, which is a continuation-in-part of Ser. No. 94,580, Dec. 2, 1970, Pat. No. 3,686,006. This application Mar. 21, 1973, Ser. No. 343,287
Int. Cl. C04b 35/14; C08b 41/24
U.S. Cl. 264—49 3 Claims

1. In a method of making refractory articles by the procedure including:

a. preparing a mixture consisting essentially of:
i. comminuted refractory material as the major component,
ii. from 10–35% by weight of the total weight of said mixture of a first binder which is in a solid state at room temperature and is characterized by the capability of being changed from a solid to a flowable state and of being resolidified at room temperature, and by a vapor pressure of at least 0.1 mm of Hg at the triple point, and
iii. from 0.8–11% by weight of the total weight of said mixture of a second binder which is in a solid state at room temperature and has the characteristics of being miscible with said first binder when it is in a flowable state, the capability of being hardened to impart strength to articles formed from said mixture, and a vapor pressure lower than that of said first binder so that said second binder will hold articles molded from said mixture intact during sublimation of said first binder, said second binder being at least one material selected from the class consisting of natural and synthetic resins,
b. injection molding an article from said mixture,
c. subliming said first binder from the molded article, and
d. firing said article to sinter said refractory material,

the improvement wherein said second binder consists of ethyl cellulose in an amount of from 4.5–100% by weight of the total weight of said second binder, said ethyl cellulose being present in a minimum amount of 0.5% by weight of the total weight of said mixture.

3,859,406

PRODUCTION OF CELLULAR ARTICLES BY INJECTION MOLDING

Jan Czerski, Crewe, England, assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 814,365, April 8, 1969, Pat. No. 3,698,849. This application Nov. 8, 1971, Ser. No. 196,610
Claims priority, application Great Britain, Apr. 11, 1968, 17521/68
Int. Cl. B29f 1/00
U.S. Cl. 264—51 2 Claims

1. A method of manufacturing a cellular article by injection molding, which comprises charging a mold with a melt of a foamable thermoplastic polymer composition from the injection nozzle of an extruding device through a sprue bush which in the injection position is thermally insulated from said injection nozzle by an insulating element between the outlet end of the nozzle and said sprue bush, said element being apertured for the passage therethrough of foamable melt, closing said nozzle at its outlet end while maintaining it in its injection position throughout the molding cycle, and removing the mold cellular article from the mold.

3,859,407

METHOD OF MANUFACTURING PARTICLES OF UNIFORM SIZE AND SHAPE

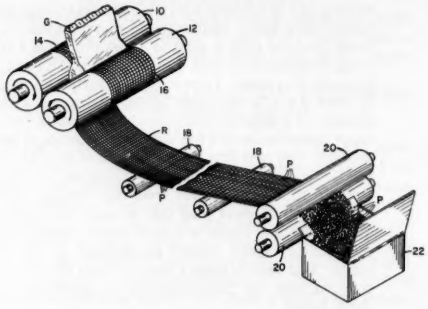
Wendell S. Blanding, Painted Post, and Jack A. Brothers, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 15, 1972, Ser. No. 253,186
Int. Cl. C04b 41/14, 41/24
U.S. Cl. 264—62 3 Claims

1. A method of continuously forming particles of uniform size and shape from flowable batch material which comprises:

a. providing a pair of cooperating forming rollers,
b. providing a patterned surface having a plurality of individual uniform recesses of desired size and shape across and about an operating surface of at least one of said cooperating rollers,
c. supplying a flow of said flowable batch material to the bite of said cooperating rollers,
d. roll-forming between said pair of cooperating rollers a longitudinally continuous ribbon of particles of uniform size and shape connected together along adjacent edge

portions by a web portion extending the width of said patterned surface, and



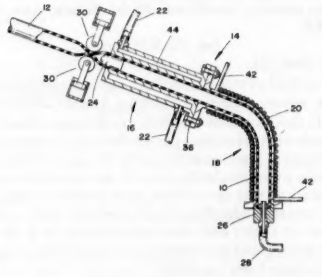
e. flexing the ribbon between a pair of off-set rolls out of the plane of the ribbon to liberate the connected particles therefrom into a plurality of individual separated particles of the same uniform size and shape as initially produced in ribbon form.

3,859,408

METHOD FOR MAKING TUBULAR ARTICLES

Harold C. Voss, Denver, and Leonard F. Hartford, Westminster, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Jan. 29, 1973, Ser. No. 327,368
Int. Cl. B29c *17/07, 17/14*
U.S. Cl. 264—89 **11 Claims**



1. A method of molding successively adjacent flexible tubular articles from a continuous length of reinforced, temperature setting tubular carcass comprising the steps of:

inserting a first end portion of the tubular carcass in an open end, generally tubular cross-sectional mold that includes a sleeve portion with a tubular carcass receiving opening and a cavity portion with an article exit opening;

sealing the first end portion of the tubular carcass near the article exit opening;

internally pressurizing the tubular carcass while simultaneously: positioning a movable plug in the hollow of the tubular carcass juxtaposed the sleeve, sealing the hollow of the tubular carcass at the movable plug and expanding the first end portion radially outward against the cavity portion effecting article shaping;

setting the tubular carcass disposed in the cavity portion and at least partially setting a successively connecting portion of the tubular carcass;

relieving the internal pressure;

pulling the set portion of the tubular carcass from the mold while simultaneously pulling successively connected portions of the tubular carcass into the sleeve portion and mold portion and positioning the at least partially cured portion of the tubular carcass near the article exit opening;

severing the set portion from the tubular carcass to define a mold set tubular article of predetermined finished length; and

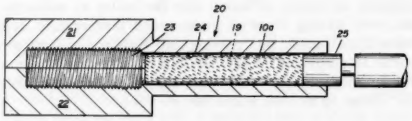
sealing the at least partially set portion of tubular carcass at the article exit opening and repeating the above steps starting with pressurizing whereby successively adjacent tubular articles are molded and set from tubular carcass without interim waste of the tubular carcass.

3,859,409

METHOD OF MAKING A FIBER REINFORCED PLASTIC ARTICLE

William C. Coonrod, Richardson, Tex., assignor to Fibergrate Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 32,270, April 27, 1970, abandoned. This application Aug. 21, 1972, Ser. No. 282,224
Int. Cl. B29d *15/00;* **B29c** *17/02*
U.S. Cl. 264—295 **23 Claims**



1. A method of molding an elongated solid plastic threaded rod containing continuous reinforcing fibers extending throughout the longitudinal cross section thereof, said rod having a helical screw thread integrally molded on the longitudinal periphery thereof, and said continuous fibers in the peripheral portion of said rod being formed in undulations uniformly within said helical thread throughout the length of said rod from its ends throughout the shank portion thereof and thereby generally conforming to the shape of said thread, and said fibers being present in said threaded rod in an amount of at least about 27 percent of the axial cross sectional area of said rod, said method comprising:

a. forming a preform made of a deformable plastic material having continuous reinforcing fibers extending continuously through the axial portion thereof, and the peripheral fibers of said preform being permanently distorted in said preform in a helical manner in an amount corresponding to at least one-fourth of a convolution throughout the length of said preform, and said fibers being present in an amount of at least about 27 percent of the axial cross sectional area of said preform;

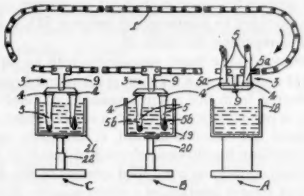
b. compressing said preform with axial force in an enclosed mold zone having a shape corresponding to said plastic article to cause said elongated preform to shorten in length and expand such that peripheral portions of said preform containing said continuous helically distorted fibers distort to correspond to the interior of said mold zone to form said thread, said fibers in said thread being in the form of undulations to yield a molded shape of said threaded rod; and

c. solidifying said molded shape to yield said plastic article.

3,859,410
MANUFACTURE OF GLOVES, SUCH AS SURGICAL GLOVES, FROM LATEX

Henry Sidley, Johannesburg, Transvaal, South Africa, assignor to Vulco-Sidley Machine Company (Proprietary) Limited, Industria West Johannesburg Transvaal, South Africa

Filed Dec. 22, 1969, Ser. No. 887,225
Claims priority, application South Africa, Dec. 23, 1968, 68/8448
Int. Cl. A41d *19/04*
U.S. Cl. 264—303 **6 Claims**



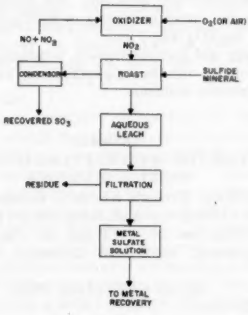
1. A method of producing a glove having a cuff portion of greater thickness than the remaining portion of the glove, said method comprising:

a. locating a hand-shaped former with the fingers disposed upwardly,
b. applying concentrated liquid latex coagulant only to the cuff portion of the former with the former so disposed;
c. allowing the concentrated liquid coagulant applied to the cuff portion to dry to a point at which it does not run;
d. inverting the former to finger tips-down position;
e. applying dilute liquid latex coagulant to the hand portion of the former at least up to the edge of the dried coagulant on the cuff portion;
f. applying liquid latex on the former up to the required length of the glove including the cuff portion so as to form a thicker layer of latex on the cuff portion as compared to the remainder of the glove;
g. curing the latex; and
h. removing the resulting glove from the former.

3,859,411
RECOVERY OF METAL VALUES FROM SULFIDE ORES USING NITROGEN DIOXIDE AS A ROAST GAS

Michael Dubeck, Birmingham, and Duane C. Hargis, Southfield, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Aug. 28, 1972, Ser. No. 284,350
Int. Cl. C22b *1/06, 3/00*
U.S. Cl. 423—45 **20 Claims**



1. A process for preparing metal sulfate from sulfide metal mineral which comprises

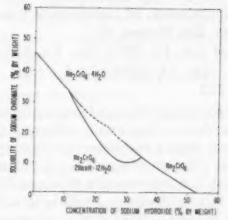
1. treating said sulfide mineral with nitrogen dioxide containing gas having at least 1% NO_2 at a temperature of from about 350°C. to about 750°C.,
2. leaching the treated sulfide mineral with an aqueous medium, selected from the class consisting of water and aqueous mineral acid of up to 30% acid, and
3. separating liquid from the solids obtained in the step (2) leaching,

whereby metal value contained in said mineral is obtained as a metal sulfate solution.

3,859,412
PROCESS FOR PRODUCTION OF ALKALI METAL CHROMATES

Taijiro Okabe, Sendai, and Koji Kashiwase, Chiba, both of Japan, assignors to Nippon Chemical Industries Co., Ltd., Tokyo, Japan

Filed Jan. 2, 1974, Ser. No. 430,124
Int. Cl. C01g *37/14*
U.S. Cl. 423—61 **10 Claims**



1. A process for producing alkali metal chromates from a chrome ore which comprises reacting at a temperature of 400° to 700°C a chrome ore with an alkali metal hydroxide in a molten state and in the presence of from 1 to 2.5 moles of an alkali metal salt of a nitrogen oxyacid per mole of the Cr_2O_3 present in said chrome ore, said alkali metal hydroxide being present in an amount of more than 2 moles per mole of the Cr_2O_3 present in said chrome ore, and leaching the resulting alkali metal chromate from the reaction product with water or a dilute aqueous solution of an alkali metal chromate, the alkali metal of said alkali metal chromate in said dilute aqueous solution being the same as that of said alkali metal hydroxide.

3,859,413
ALUMINA RECOVERY FROM OIL SHALE RESIDUE

Frank C. Haas, Arvada, Colo., assignor to The Oil Shale Corporation, New York, N.Y.

Filed Aug. 9, 1972, Ser. No. 279,194. The portion of the term of this patent subsequent to Mar. 20, 1990, has been disclaimed.
Int. Cl. C01f *7/34, 7/14*
U.S. Cl. 423—122 **4 Claims**

1. A process for recovering high purity, low silica alumina from the pyrolysis residue of dawsonitebearing oil shale which comprises:

a. wetting and leaching the pyrolysis residue with a dilute alkaline leach liquor containing from about 5 to about 25 grams per liter of caustic soda at a leaching temperature of from about 5° C. to about 40° C. for a short leaching time period of about 1 minute or less to solubilize the aluminum values of the pyrolysis residue in the leach liquor; and

b. heating the leach liquor containing the solubilized aluminum values to a temperature of from about 60° C. to about 75° C. in the presence of alumina trihydrate seed to precipitate alumina trihydrate directly from the leach liquor.

3,859,414

REMOVAL OF H_2S FROM A GAS STREAM CONTAINING H_2S AND CO_2

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 15, 1973, Ser. No. 323,613

Int. Cl. C01b *17/16, 31/70*

U.S. Cl. 423—222 **13 Claims**

1. A method for removing H_2S from a gas stream containing H_2S and CO_2 without substantially affecting the CO_2 content of the gas stream, which comprises contacting the gas stream with an aqueous solution of a water-soluble sulfite at a pH of about 6 to about 7, a temperature of about 20° to about 150° C. and a mole ratio of hydrogen sulfide to sulfite of less than 0.5:1, whereby to form a treated gas stream which is substantially reduced in H_2S content and a rich absorbent stream containing a thiosulfate compcund and which is substantially free of elemental sulfur.

3,859,415

HYDROGEN CYANIDE REMOVAL

Thomas Nicklin, Rochdale, and Peter Spence Clough, Manchester, both of England, assignors to North Western Gas Board, Cheshire, England

Filed Sept. 15, 1972, Ser. No. 289,384

Claims priority, application Great Britain, Sept. 21, 1971, 43878/71

Int. Cl. C01c *3/04*

U.S. Cl. 423—236 **3 Claims**

1. A method for removing hydrogen cyanide from a gas mixture containing hydrogen, hydrogen cyanide and hydrogen sulphide which process comprises contacting said mixture with a tricomponent catalyst system containing 8.4% nickel, 10.7% uranium and 9.1% thorium disposed as their oxides on a gamma alumina support, at a temperature of from 150° to 250° C.

3,859,416

SCRUBBING A GAS STREAM CONTAINING SO_2 AND O_2 WITH AN ABSORBENT CONTAINING A REDUCING AGENT

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 226,018, Feb. 14, 1972, , which is a continuation-in-part of Ser. No. 9,968, Feb. 9, 1970, Pat. No. 3,644,087. This application Mar. 2, 1973, Ser. No. 337,605

Int. Cl. C01b *17/64*

U.S. Cl. 423—242 **16 Claims**

1. A process for treating an input gas stream containing SO_2 and O_2 in order to continuously remove SO_2 therefrom, said process comprising the steps of:

a. contacting the input gas stream with an aqueous absorbent containing an alkaline reagent and a reducing agent, selected from the group consisting of finely divided sulfur, a polysulfide compound, a water-soluble sulfide compound and mixtures thereof, at scrubbing and thiosulfate production conditions selected to result in a treated gas stream containing a reduced amount of SO_2 and a effluent water stream containing a water-soluble thiosulfate compound;

b. reacting at least a portion of the effluent stream from step (a) with carbon monoxide at reduction conditions selected to produce a sulfide-containing aqueous effluent stream;

c. stripping hydrogen sulfide from at least a portion of the aqueous effluent stream from step (b) to produce a regenerated aqueous absorbent stream and on H_2S-containing overhead stream; and thereafter,

d. passing at least a portion of the resulting regenerated aqueous absorbent stream to step (a).

3,859,417

SELECTIVE CHROMATOGRAPHIC SEPARATION

Aaron J. Teller, Great Neck, N.Y., assignor to Teller Environmental Systems, Inc., Worcester, Mass.

Continuation of Ser. No. 860,665, Sept. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 667,801, Sept. 14, 1967, abandoned, which is a continuation-in-part of Ser. No. 363,403, April 29, 1964, abandoned. This application June 25, 1971, Ser. No. 156,952

Int. Cl. B01d *53/34*

U.S. Cl. 423—244 **5 Claims**

1. A process for the vapor phase chromatographic separation of sulfur dioxide from a gaseous mixture which contains, in part, water vapor and sulfur dioxide comprising the steps of: a. passing said gaseous mixture at a temperature of 110°–170°F into contact with an absorbent, high surface area solid support material having deposited thereon a compound capable of reacting chemically with sulfur dioxide to form a thermally decomposible molecule, said compound being selected from the group consisting of K_2SO_3, Na_2So_3, Li_2SO_3, $CdSO_3$ and Ag_2SO_3; and ,

b. removing said gaseous mixture, substantially free of SO_2, from contact with the support material and the thermally decomposible molecule.

3,859,418

PROCESS FOR THE MANUFACTURE OF PHOSPHORUS NITRIDE DIAMIDES

Hannsjorg Ulrich, Ertstadt Kierdorf, Germany, assignor to Knapsack Aktiengesellschaft, Knapsack be; Koln, Germany

Filed Nov. 29, 1972, Ser. No. 310,593

Claims priority, application Germany, Dec. 1, 1971, 2159444

Int. Cl. C01b *21/06, 25/00*

U.S. Cl. 423—302 **10 Claims**

1. A process for the manufacture of phosphorus nitride diamides, which comprises reacting a starting material, which is white phosphorus or phosphorus trichloride being dissolved

or suspended, in a polar, inert and alcohol-free organic solvent having a boiling point lower than 100° C with chlorine and an excess of gaseous ammonia; filtering of the resulting reaction product consisting of a mixture of phosphorus nitride diamides and ammonium chloride; and separating the phosphorus nitride diamides therefrom.

3,859,419

PROCESS FOR THE MANUFACTURE OF PHOSPHOROUS ACID

Joseph Cremer, Hermulheim, and Willi Martin, Bruhl, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Dec. 29, 1972, Ser. No. 319,464

Claims priority, application Germany, Jan. 7, 1972, 2200653

Int. Cl. C01b *25/16*

U.S. Cl. 423—316 **4 Claims**

1. In the process for the manufacture of phosphorous acid from phosphorous trichloride and water as starting materials by introducing the finely divided starting materials into a reaction zone I, intimately mixing the starting materials and reacting them therein, in the gas phase at temperatures between 150° and 200° C, delivering the resulting liquid reaction product to an evaporation zone II and concentrating it therein so as to produce a melt, blowing an inert gas therethrough, removing the melt obtained and conveying the resulting gaseous reaction products to the atmosphere, through a gas-separating zone III, the improvement which comprises the steps of finely dividing and intimately mixing the starting materials by stream-spraying jointly into the reaction zone I the phosphorous trichloride and the water, concentrating the liquid reaction product to a melt within the evaporation zone II, conveying the gaseous reaction products of the zones I and II loaded with unhydrolyzed PCl_3 to the gas-separating zone III, to which water or diluted phosphorous acid is fed in a quantity necessary to hydrolyze the PCl_3 and to maintain a maximum temperature between 150° and 200° C therein, feeding the melt from the evaporation zone II to a further separation zone IV located outside of the evaporation zone II, and blowing therein through the melt and inert gas, with the resultant formation of highly concentrated phosphorous acid of high purity and discharging the off-gas from the separation zone IV to the atmosphere without passing it through the gas-separating zone III.

3,859,420

PROCESS OF MAKING SUPER-DRY SILICON DIOXIDE

Siegmar Laufer, and Waldemar Roy, both of Rheinfelden, Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt/Main, Germany

Continuation of Ser. No. 886,413, Dec. 18, 1969, abandoned. This application Aug. 26, 1971, Ser. No. 175,382

Int. Cl. C01b *33/12, 33/18*

U.S. Cl. 423—335 **6 Claims**

1. A process of making a silicon dioxide that is free of adsorbed water and of hydrogen-bonded silanol groups whose infrared spectrum is characterized by a single narrow intense band at a wavelength of about 3,700 cm^{-1} within the range between 4,000 and 2,000 cm^{-1} which is characteristic of free silanol groups which process comprises subjecting a pyrogenically produced silicon dioxide aerogel containing adsorbed water and both free and hydrogen-bonded silanol groups to treatment in a fluidized bed at a temperature between about 700° and 1,000° C and at a pressure between 2 torr and atmospheric pressure for a period between one second and a few minutes through which fluidized bed a stream of a dried gas that had been preheated to a temperature between 100° and 300° C is passed.

3,859,421

METHODS OF PRODUCING CARBONACEOUS BODIES AND THE PRODUCTS THEREOF

Edward E. Hucke, 2105 Melrose St., Ann Arbor, Mich. 48104

Continuation-in-part of Ser. No. 888,188, Dec. 5, 1969, abandoned. This application May 30, 1972, Ser. No. 257,907

Int. Cl. C01b *31/02, 31/36*

U.S. Cl. 423—445 **67 Claims**

1. The method of producing a porous carbonaceous body, comprising the steps of:

a. forming a free-flowing, castable, fluid mixture having a continuous liquid phase, said mixture being formed by blending together:

i. a uniformly dispersable, organic, carbon yielding binder which is decomposable at a temperature in the range of 250°–2,400°C. to a solid carbonaceous residue constituting in excess of 0.2 percent by weight of the original binder;

ii. a liquid pore former for forming a macroscopically uniform, continuous liquid phase throughout the castable fluid mixture, said pore former having a viscosity below 1,000 centipoises, a low vapor pressure, and a high flash point; and

iii. a dispersing agent coactable with said binder and said pore former to keep said binder uniformly distributed throughout said castable mixture and to keep the liquid phase continuous;

said carbon yielding binder constituting from 5 to 95 percent by volume of said mixture, the pore former and dispersing agent together constituting from 5 to 91 percent by volume of the mixture, and the blending of the binder, pore former, and dispersing agent being continued until the mixture becomes free-flowing and the carbon yielding binder is uniformly distributed throughout the mixture;

b. casting the mixture to shape to thereby impart a selected shape to said mixture;

c. consolidating the cast mixture to a self-supporting consolidated body of organic material having uniformly distributed there-throughout a continuous phase of a liquid substance which can be eliminated from said body to form a system of uniformly distributed, primarily interconnected pores throughout the body, said consolidation step being carried out at a temperature below the vaporization points of all of the constituents of the mixture to retain the constituents of the mixture within the cast shape;

d. removing the substance constituting the continuous liquid phase from the self-supporting body to form the system of interconnected pores therethroughout, said step being carried out without increasing the volume of the self-supporting body; and

e. heating the self-supporting body to a temperature sufficiently high to convert said body to a cohesive article of carbonaceous character having throughout a system of uniformly distributed, interconnected pores.

3,859,422

METHOD FOR REPRODUCIBLY CONTROLLING THE CRYSTALLINITY OF SYNTHETIC GRAPHITE

Ottis J. Horne, Jr., and Wesley E. Smith, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 16, 1972, Ser. No. 298,136

Int. Cl. C01b *31/02, 31/04*

U.S. Cl. 423—448 **3 Claims**

1. A method for preparing synthetic graphite and selectively varying the crystalline microstructure of the graphite by the steps of forming a homogeneous blend of a thermoplastic indene-derived resin precursor selected from the group consisting of cinnamylideneindene, benzylideneindene, 9-anthrylideneindene, acenaphthylene, and isotruxene, and a thermosetting indene-derived resin precursor selected from

the group consisting of furfurylideneindene and p-sylylideneindene, said thermosetting indene-derived resin precursor being in the blend at a concentration in the range of a finite quantity near 0 weight per cent sufficient to provide a finite change in the crystal size and interlayer spacing of the graphite to a maximum quantity of about 60 weight per cent for selectively varying said crystal size and said interlayer spacing from said finite change, and graphitizing the blend in an inert atmosphere.

3,859,423

CLOSED POND SYSTEM FOR WET PROCESS PHOSPHATE PLANTS

Rufus G. Hartig, 230 Hillsboro Hotel Building, Dover, Fla. 53602

Continuation-in-part of Ser. No. 60,226, Aug. 3, 1970, Pat. No. 3,720,757. This application July 24, 1972, Ser. No. 274,222
Int. Cl. C01b *11/00, 25/16*
U.S. Cl. 423—472 **2 Claims**

1. Process for minimizing the fluorine vapor pressure of scrubber and wash liquors of phosphate complexes, fluorine in the liquors being principally in the form, SiF_4, comprising maintaining an excess of NaF in said liquors in the scrubbing towers and washing location of the phosphate complex so that substantially all SiF_4 which is absorbed by and dissolved in said liquors in the phosphate complex is immediately converted to solid Na_2SiF_6 in suspension according to the chemical reaction, $SiF_4 + 2\ NaF \rightarrow Na_2SiF_6$, flowing said liquors from said scrubbing towers and wash locations, separating Na_2SiF_6 from said liquors, calcining the separated Na_2SiF_6 to form NaF and SiF_4 according to the chemical reaction, $Na_2SiF_6 \xrightarrow{heat} 2NaF + SiF_4$, returning at least a portion of the NaF to said liquors to maintain said excess therein and absorbing the SiF_4 in water to form H_2SiF_6 in solution, whereby the fluorine vapor pressure of said liquors is maintained low, and returning said liquors to the scrubbing towers and wash locations of said phosphate complex for reuse.

3,859,424

PROCESS AND CATALYST FOR FLUORINATING ALIPHATIC COMPOUNDS

Otto Scherer, Bad Soden/Taunus; Jurgen Korinth, Hofheim/-Taunus, and Peter Frisch, Frankfurt am Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 601,846, Dec. 15, 1966, abandoned, which is a continuation-in-part of Ser. No. 248,866, Jan. 2, 1963, abandoned. This application Feb. 19, 1971, Ser. No. 117,052
Claims priority, application Germany, Jan. 13, 1962, 1252182; June 20, 1962, 1254611; Aug. 25, 1962, 1282630; Aug. 16, 1962, 1443835; Aug. 31, 1962, 1443837
Int. Cl. C01g *37/06;* **B01j** *11/78*
U.S. Cl. 423—472 **5 Claims**

1. A process for preparing a fluorination catalyst consisting essentially of chromium and fluorine and oxygen in combination therewith, the empirical composition of which varies between CrF_2O and $CrFO_2$ when the molar amount of chromium is taken as one, which comprises passing over a hydrated oxide of trivalent chromium of the general formula $Cr_2O_3 \cdot xH_2O$, wherein x is from 1 to 9, 3 to 8 moles of hydrogen fluoride per mole of said hydrated oxide of trivalent chromium at a temperature in the range from 150° to 600°C and for a time from 2 to 100 hours.

3,859,425

PROCESS FOR RECOVERY OF SULFUR VALUES

Arthur S. M. Wood, Jr., Mobile, Ala., and Kirk Vail Darragh, Yorktown, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 27, 1972, Ser. No. 309,856
Int. Cl. C01b *17/04*
U.S. Cl. 423—567 **11 Claims**

1. In a process for preparing carbon tetrachloride by the reaction of carbon disulfide and chlorine wherein a crude mixture of sulfur with sulfur chloride and iron is produced and the sulfur is separated from the sulfur chloride and iron, the improvement which comprises:

a. forming a solution by dissolving the crude mixture in a solvent selected from the group consisting of carbon disulfide, sulfur monochloride, sulfur dichloride and mixtures thereof;
b. separating undissolved solids from the solution;
c. precipitating sulfur from the solution to form precipitated sulfur and a mother liquor;
d. separating the precipitated sulfur from the mother liquor whereby the concentration of sulfur chloride and iron in the sulfur is reduced.

3,859,426

METHOD OF PURIFYING REFRACTORY OXIDES OF ALUMINUM AND ZIRCONIUM

Robert L. Lambert, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 17, 1972, Ser. No. 218,456
Int. Cl. C04b *35/02*
U.S. Cl. 423—592 **4 Claims**

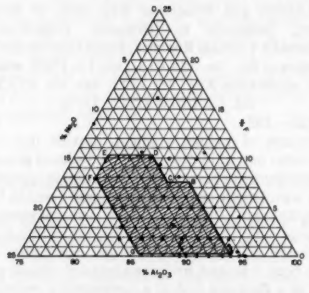
1. In a method of purifying a refractory oxide for use in an electrophoretic deposition process the steps comprising: firing said oxide in a muffle furnace for between 14 and 16 hours at a temperature between about 1,050° to 1,100°C; cooling said oxide to between about 20° to 25°C in a dessicator; leaching said oxide with repeated rinses of hot deionized water until a rinse shows a pH of about 7.0 to 7.5; drying said oxide at 105°C; and storing said oxide in a dessicator.

3,859,427

PRODUCTION OF BETA ALUMINA

Thomas L. Francis, Belleville, and George MacZura, East St. Louis, both of Ill., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 875,273, Nov. 10, 1969, abandoned. This application Nov. 4, 1971, Ser. No. 195,622
Int. Cl. C01f *7/04, 7/16*
U.S. Cl. 423—600 **13 Claims**



1. A process for production of beta alumina which comprises reacting at a temperature of from about 900-1600°C each of the components of a ternary mixture of (1) a separate source of alumina, (2) a separate fluoride source and (3) a separate source of an oxide other than aluminum oxide se-

lected from the group consisting of alkali metal oxides and alkaline earth metal oxides in an amount sufficient to provide the percentages of alumina calculated as Al_2O_3, fluoride calculated as F and oxide other than aluminum oxide calculated as % alkali metal oxide or alkaline earth metal oxide, defined by the area encompassed by line ABCDEFG of the drawing in which % Na_2O illustrates the permissible range of said alkali metal oxide and alkaline earth metal oxide other than aluminum oxide, thereby forming an alumina of at least 85% by weight beta alumina, and collecting the resulting product.

3,859,428
PRODUCTION OF HYDROGEN
Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Apr. 2, 1973, Ser. No. 347,586
Int. Cl. C01b *1/02, 1/18, 2/16*
U.S. Cl. 423—651 **9 Claims**

1. A process for the production of hydrogen which comprises partially oxidizing an asphaltene petroleum fraction which is insoluble in light paraffinic hydrocarbons a gas consisting of an elemental oxygen-containing gas having an oxygen content insufficient for stoichiometric oxidation of the hydrogen values of the petroleum fraction, so that minimum oxidation of the hydrogen values to water will occur, in the presence of a catalyst comprising a salt containing nickel or manganese dispersed on a basic inorganic support at a temperature in the range of from about 100°C to about 1,000°C, a pressure in the range of about atmospheric to about 100 atmospheres and a contact time of at least about 3 hours, to produce a resultant gas mixture containing hydrogen and recovering hydrogen therefrom.

3,859,429
M-IODOHIPPURIC ACID LABELLED WITH RADIOACTIVE IODINE AND PROCESS FOR ITS PREPARATION
Horst Hermann Elias, Farbwerke Hoechst A.G., Frankfurt-/Main, Germany
Filed July 7, 1972, Ser. No. 269,730
Int. Cl. A61k *27/04*
U.S. Cl. 424—1 **8 Claims**

1. m-Iodohippuric acid labelled with radioactive iodine and the salts of the labelled acid with physiologically compatible bases.

3,859,430
RADIOACTIVE IODINE LABELING OF VIRUSES, ENZYMES AND FLOURESCENE ISOTHYIOCYANATE
Gokaldas C. Parikh, and Charles Steven Duvall, both of Brookings, S. Dak., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 29, 1973, Ser. No. 327,257
Int. Cl. A61k *27/04*
U.S. Cl. 424—1 **12 Claims**

1. A method of radioactively tagging entities comprising the steps of:

combining six parts of a 0.2M phosphate buffered saline solution having a pH of 7 with one part of a 0.1 N KI solution containing 0.1 N I_2;

adding a predetermined quantity of carrier-free, radioactive iodine-125 to the combined solutions;

adding a predetermined quantity of a material containing the entity to be tagged to the combined solutions, said entity being from the group consisting of viruses having sulphydryl groups in their protein coat, enzymes having sulphydryl groups in their amino acids, or fluorescene isothiocyanate;

stirring the combined solutions to allow the iodine and the entity to react;

converting any unreacted iodine to iodide in the combined solutions; and

dialyzing the combined solutions to isolate the tagged entity.

3,859,431
DRUG FORMULATIONS
John Michael Newton, West Bridgford, and Geoffrey Rowley, Sunderland, both of England, assignors to Lilly Industries Limited, London, England
Filed Jan. 4, 1973, Ser. No. 321,090
Int. Cl. A61j *3/07*
U.S. Cl. 424—37 **5 Claims**

1. A pharmaceutical two-piece hard gelatin capsule comprising a physiologically active agent commingled with an amount, of from about 2 to about 65 percent by weight of the physiologically active agent, as a release rate improving quantity of an alkali metal carboxymethyl starch.

3,859,432
METHOD FOR SOOTHING COOLING AND REFRESHING
Ben Dinerstein, 40 East 9th St., New York, N.Y. 10003
Continuation-in-part of Ser. No. 677,732, Oct. 24, 1967, abandoned, which is a continuation-in-part of Ser. No. 447,895, April 13, 1965, abandoned. This application Mar. 27, 1970, Ser. No. 23,464
Int. Cl. A61k *7/00;* **A43b** *71/00*
U.S. Cl. 424—47 **2 Claims**

1. The method of soothing, cooling and refreshing stocking-clad tired feet, which comprises spraying the stocking-clad feet with an aerosol spray composition consisting of 29.4 to 29.7 percent by weight ethanol, 0.15 to 0.3 percent by weight hexachlorophene, 0.15 to 0.3 percent by weight perfume, and the balance a mixture of equal parts of trichlorofluoromethane and dichlorodifluoromethane.

3,859,433
ANTIVIRAL TREATMENT
William Regelson, Richmond, Va., assignor to Hercules Incorporated, Wilmington, Del.
Division of Ser. No. 218,025, Jan. 14, 1972, , which is a division of Ser. No. 54,022, July 10, 1970, abandoned, which is a continuation-in-part of Ser. No. 716,257, March 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 577,675, Sept. 7, 1966, abandoned. This application Apr. 30, 1973, Ser. No. 355,610
Int. Cl. A61k *15/00, 23/00*
U.S. Cl. 424—85 **1 Claim**

1. A process of immunizing an animal exposed to encephalomyocarditis virus which comprises administering to said animal at least one dosage of from about 0.5 to 300 mg./kg. of body weight of an antiviral agent selected from divinyl ether--maleic anhydride copolymers and physiologically tolerated salts of divinyl ether--maleic anhydride copolymers, said copolymers containing divinyl ether and maleic anhydride in a mole ratio of about 1:2 and having a reduced specific viscosity of from about 0.04 to about 1.8.

3,859,434
MENINGOCOCCAL ANTIGENS
Harold J. Jennings, Ottawa, Ontario, and Charles Paul Kenny, Hull, Quebec, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Jan. 8, 1973, Ser. No. 322,063
Int. Cl. C12k *5/00*
U.S. Cl. 424—92 **7 Claims**

1. A method of recovering cross-protective antigens from *Neisseria meningitidis* comprising:

extracting harvested whole cells of the bacteria with an aqueous solution of calcium or magnesium ions at about neutral pH, the concentration of said ions being insuffi-

cient to cause lysis of the whole cells but sufficient to effect significant extraction of said antigens, and recovering soluble cross-protective proteinaceous antigens from the extract.

3,859,435

BASIC DERIVATIVES OF LYSOZYME

Tiberio Bruzzese; Giuseppe Ghieimetti, and Rodolfo Ferrari, all of Milan, Italy, assignors to SPA Societa Prodotti Antibiotici, S.p.A., Milan, Italy

Division of Ser. No. 818,156, April 21, 1969, abandoned. This application Apr. 29, 1971, Ser. No. 138,759

Int. Cl. A61k *19/00*

U.S. Cl. 424—94 **1 Claim**

1. A method of treating influenza or herpetic viral infections, which comprises administering to a host a compound selected from the group consisting of guanidyl-lysozyme containing at least two guanidyl radicals per molecule, the methyl esters of lysozyme containing at least two methoxy radicals per molecule, the methyl esters of guanidyl-lysozymes containing at least two methoxy radicals per molecule and the salts thereof with non-toxic, pharmaceutically acceptable inorganic and organic acids, in an amount of 0.5–5 g orally per day or 0.1–4 g parenterally per day.

3,859,436

SUGAR COMPOSITION FOR TOPICAL APPLICATION

Otto K. Jacobi, Wiesbaden-Igstadt, Germany, assignor to Kolmar Laboratories, Inc., Port Jervis, N.Y.

Filed Oct. 2, 1968, Ser. No. 764,609

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **2 Claims**

1. A product for human topical application, comprising a topical base having incorporated therein a non irritating soothing amount of a sugar composition, said composition consisting essentially by weight of:

Glucose	1 — 99%
Fructose	1 — 99%
Glucosamine	.001 — 40%
Desoxyribose	.001 — 40%
Ribose	.001 — 60%

3,859,437

REDUCING CHOLESTEROL LEVELS

Alan Hugh Weigand, Fort Lee, N.J., assignor to Intellectual Property Development Corporation, New Rochelle, N.Y.

Continuation-in-part of Ser. No. 259,062, June 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 126,296, March 19, 1971, abandoned. This application Apr. 2, 1973, Ser. No. 346,751

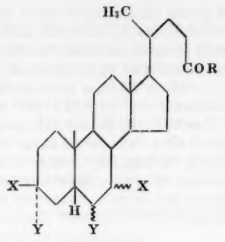
Int. Cl. A61k *27/00*

U.S. Cl. 424—238 **19 Claims**

1. The method of reducing lipid levels of human beings, which comprises;

a. orally administering over an extended period of time, to a human being in a hyperlipidemic state;

b. a small but effective amount sufficient to effect a reduction of the lipid levels of said human being, of a compound of the formula:



wherein

R is OH, $NHCH_2COOH$, or $NHCH_2CH_2SO_3H$;

each X is hydrogen;

each Y is hydroxy, or acyloxy; and X and Y when taken together is oxo (O=);

and the non-toxic, pharmaceutically acceptable salts thereof.

3,859,438

PHARMACEUTICAL COMPOSITIONS CONTAINING AN N-(1-BICYCLIC ARYL-PROPYL-2)-N-BICYCLIC ARYL-PIPERAZINE AND METHOD OF USE

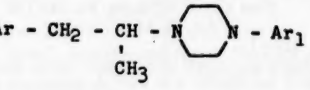
Ernst Otto Renth; Anton Mentrup; Kurt Schromm, all of Ingelheim/Rhein, and Rolf Giesemann, Biberach a.d. Riss, all of Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim/Rhein, Germany

Division of Ser. No. 160,891, July 8, 1971, Pat. No. 3,808,212. This application Nov. 21, 1973, Ser. No. 417,884

Int. Cl. A61u *27/00*

U.S. Cl. 424—250 **8 Claims**

1. A pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective CNS-depressing amount of a compound of the formula



wherein

Ar is 3,4-methylenedioxy-phenyl, and

Ar_1 is naphthyl, tetrahydronaphthyl or indanyl, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,859,439

2,3-DIHYDRO-5 -TRIFLUOROMETHYL-1H-DIBENZO(2,3:6,7) THIEPINO (4,5-C) PYRROLES AS CNS-DEPRESSANTS

Hans Blattner, and Walter Schindler, deceased, late of Basel, Switzerland (by Leonhard Gysin, executor), assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

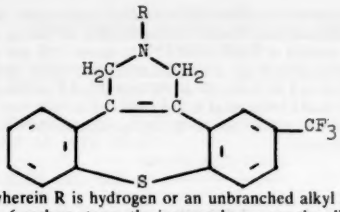
Division of Ser. No. 145,022, May 19, 1971, Pat. No. 3,755,357. This application Sept. 5, 1972, Ser. No. 286,502

Claims priority, application Switzerland, May 26, 1970, 7798/70

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 **8 Claims**

1. A method of producing a central-nervous system depressant effect on warm-blooded animals comprising the oral, rectal, or parenteral administration thereto of a central-nervous system depressantly effective amount of a compound of the formula I



(I)

wherein R is hydrogen or an unbranched alkyl group having 1–6 carbon atoms, the isopropyl group or the allyl group or a pharmaceutically acceptable acid-addition salt thereof.

3,859,440

CERTAIN THIENYL COMPOUNDS USED TO CONTROL ACARINA

Alexander Serban, Doncaster, and Lionel Grenville Webber, D'Aguilar, both of Australia, assignors to ICI Australia Limited, Melbourne, Victoria, Australia

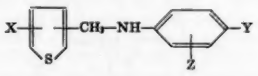
Filed Sept. 26, 1972, Ser. No. 292,273

Claims priority, application Australia, Oct. 8, 1971, 6575/71

Int. Cl. A01n *9/12*

U.S. Cl. 424—275 **6 Claims**

1. A process for eradicating acarina from plants or animals infested with acarina which comprises applying to such plants or animals an acaricidally effective amount of a compound of the formula



wherein:

X is selected from the group consisting of hydrogen, chlorine, methyl and bromine,

Y is selected from the group consisting of hydrogen, chlorine, fluorine and methyl, and

Z is selected from the group consisting of hydrogen, chlorine and methyl

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3,859,441

ANTI-ARTHROPODAL CYCLIC DITHIOKETALS OF GLYOXYLOYL HALIDE 1-PHENYLHYDRAZONES

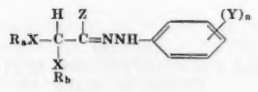
Malcolm W. Moon, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 93,497, Nov. 27, 1970,. This application Sept. 17, 1973, Ser. No. 397,683

Int. Cl. A01n *9/12*

U.S. Cl. 424—277 **13 Claims**

1. A method for controlling arthropod pests with a cyclic dithioketal of glyoxyloyl halide 1-phenylhydrazone of the formula:



wherein R_a and R_b constitute a lower-alkyl substituted or unsubstituted ethylene or trimethylene group having a total of from 2 to 9 carbon atoms, inclusive; Y is selected from the group consisting of halogen, lower-alkyl of from 1 to 4 carbon atoms, inclusive, lower-haloalkyl of from 1 to 4 carbon atoms, inclusive, lower-alkoxy of from 1 to 4 carbon atoms, inclusive, and lower-alkylmercapto of from 1 to 4 carbon atoms, inclusive; n is an integer from 0 to 5, inclusive; Z is chlorine or bromine, and X is a sulfur group selected from the class consisting of sulfide, sulfinyl, and sulfonyl, which comprises contacting said pests with an effective anti-arthropodal amount of said cyclic dithioketal of glyoxyloyl halide 1-phenylhydrazone.

3,859,442

A METHOD OF INHIBITING SYMPTOMS OF ASTHMA

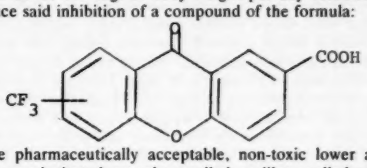
Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 174,260, Aug. 23, 1971, abandoned. This application Nov. 8, 1973, Ser. No. 413,978

Int. Cl. A61k *27/00*

U.S. Cl. 424—283 **6 Claims**

1. A method useful for inhibiting the symptoms of the asthmatic condition resulting from an antigen-antibody reaction in a host susceptible to said reaction which comprises administering to said host an effective amount of from about 0.005 mg. to about 100 mg. of body weight per day sufficient to produce said inhibition of a compound of the formula:



or the pharmaceutically acceptable, non-toxic lower alkyl esters; unsubstituted, monolower alkyl, or dilower alkyl substituted amides or salts thereof.

3,859,443

COMPOSITION AND METHODS OF TREATMENT EMPLOYING ACRYLANILIDES AS ANTICOCCIDIAL AGENTS

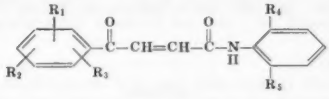
Helmut H. Mrozik, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 15, 1973, Ser. No. 416,129

Int. Cl. A61k *27/00*

U.S. Cl. 424—324 **9 Claims**

1. A composition for the treatment of coccidiosis in poultry comprising an inert carrier and a therapeutically effective amount of a compound of the formula:



where R_1, R_2 and R_3 are the same or different and are hydrogen or loweralkyl; and where R_4 and R_5 are the same or different and are loweralkyl.

3,859,444

METHODS OF KILLING BACTERIA USING ALKYLTHIOSEMICARBAZIDES

Tomomasa Misato, Tokyo; Toshiyuki Suzuki, Ageo; Taizo Nakagawa, Ageo; Kaoru Ohmori, Ageo; Takeo Baba, Tokyo; Shuichi Ishida, Omiya, and Junichi Ishii, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1973, Ser. No. 333,173

Claims priority, application Japan, Feb. 18, 1972, 47-16152

Int. Cl. A01n *9/12, 9/20*

U.S. Cl. 424—323 **3 Claims**

1. A method of exterminating bacteria selected from the group consisting of *Xanthomonas oryzae* and *Xanthomonas citri* which comprises applying to plants or crops infested with said bacteria between 50 grams per 10 ares and 400 grams per 10 ares of the compound expressed by the formula:

$$R\text{—}NHNH\overset{\overset{S}{\|}}{C}NH_2$$

where

R is an alkyl group selected from the group consisting of methyl, ethyl and n-propyl.

3,859,445

STABLE LIQUID EMULSIFIER COMPOSITIONS IN BREAD MAKING

Roy Kenneth Langhans, Newark, Del., assignor to ICI United States Inc., Wilmington, Del.

Division of Ser. No. 150,195, June 4, 1971, Pat. No. 3,785,993. This application Aug. 23, 1973, Ser. No. 390,699

Int. Cl. A21d *2/16*

U.S. Cl. 426—24 **2 Claims**

1. In a method of preparing a yeast-raised, flour containing bakery product containing not more than 5 percent shortening and not more than 8 percent residual sugar, which comprises preparing a dough mix and thereafter baking said mix, the improvement which comprises adding to the dough ingredients from about 0.15 percent to about 3 percent by weight of flour in said ingredients, a clear liquid emulsifier composition comprising from 60 to 99.3 weight percent of a mixture of a fatty acid monoglyceride compound and a polyoxyethylene containing compound selected from the group consisting of polyoxyethylenated fatty acid esters of glycerol, hexitan, hexitol, and isohexide and fatty acid esters of polyoxyethylenated hexitan, hexitol, glycerol, and isohexide wherein said mixture is from 10 to 80 weight percent of said monoglyceride compound, said monoglyceride compound having fatty acid moieties of 12 to 22 carbon atoms and at least 86 mol percent of said moieties being unsaturated fatty acid moieties, and which contains at least 40 percent by weight of said fatty acid moieties substituted in the alpha position, and said polyoxyethylene-containing compound having mols of ethylene oxide per mol of hexitan, hexitol, glycerol, and isohexide in the range of between 4:1 to 40:1 wherein said fatty acid moieties have 12 to 22 carbon atoms, and said composition further comprising a clarifier selected from the group consisting of 3 to 40 percent by weight propylene glycol, 0.7 to 40 percent by weight ethanol, 5 to 21 percent by weight water, and 3 to 25 percent by weight edible oil selected from the group consisting of cottonseed, safflower, corn, soybean, coconut, peanut, and hydrogenated oils which are liquids at temperatures about 35°F.

3,859,446

METHOD FOR RAPID CURING OF CHEESE

Royal A. Sullivan, Binghamton, N.Y., and Dolores Infantino, Skokie, Ill., assignors to Kraftco Corporation, Glenview, Ill.

Filed Sept. 26, 1973, Ser. No. 400,888

Int. Cl. A23c *19/12*

U.S. Cl. 426—36 **4 Claims**

1. A method for producing ripened cheese in a reduced period of time which comprises adding an effective amount of adenosine 3′,5′, cyclic monophosphate to cheese curd after whey has been drained from the curd and prior to forming the curd into cheese.

3,859,447

MARGARINE

Baratham Sreenivasan, Hackensack, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 69,780, July 27, 1970, Pat. No. 3,748,348. This application Mar. 7, 1972, Ser. No. 232,641

Int. Cl. A23d *3/00*

U.S. Cl. 426—73 **7 Claims**

1. A plastic margarine which is an emulsion comprising from about 80–95% of an oleaginous phase and from about 20–5% of an aqueous phase, said oleaginous phase comprising a non-hydrogenated, directed interesterified triglyceride oil and minor additves, said directed interesterified oil having a linoleic acid content of from about 50% to about 79% and a linolenic acid content of not more than about 10% and a solid fat index of about 3 to about 25 at 0°C and about 2 to about 12 at 21.1°C., and wherein said minor additives include stabilizers, emulsifiers, preservatives, flavoring substances, vitamins and colorants.

3,859,448

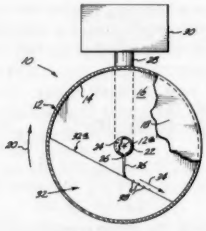
METHOD AND PRODUCT LIQUID MOLASSES WITH DIATOMACEOUS EARTH

La Verne A. Hettrick, Carson City, Nev., assignor to International Feed Improvement Association, Inc., Castroville, Calif.

Continuation of Ser. No. 242,156, April 7, 1972, abandoned. This application Apr. 25, 1974, Ser. No. 464,066

Int. Cl. A23k *1/02*

U.S. Cl. 426—96 **2 Claims**



1. A method of producing a free-flowing, granular, liquid-molasses-containing product comprising

forming an undivided stream of liquid molasses,

contacting such stream with a stream of diatomaceous earth particles, with such particles, at the region of contact of said streams, moving at a speed exceeding the highest speed at which molasses in said stream at said region can flow cohesively and without dividing,

by said contacting, dividing the stream of molasses into droplets, and

following said dividing, coating such droplets with particles in said stream of particles to form a final product comprising granules, with each granule consisting of a liquid molasses core contained within an adhering coating of diatomaceous earth particles.

3,859,449

TORTILLA AND PROCESS USING ACETIC AND PROPIONIC ACIDS

Manuel Jesus Rubio, Bridgeport, Conn., assignor to Roberto Gonzalez Berrera, Vista Hermosa, Monterrey, Mexico

Filed July 24, 1970, Ser. No. 58,138

Int. Cl. A23b ; A21d *4/00*; A23l *3/34*

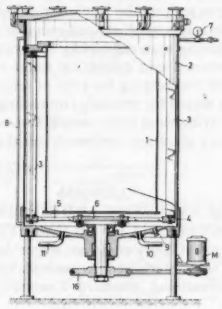
U.S. Cl. 426—151 **9 Claims**

1. A tortilla which maintains its flexibility after storage without moisture loss, essentially consisting of nixtamalized corn or nixtamalized corn flour and a compound of the class consisting of acetic acid, propionic acid and their anhydrides in a concentration of 1 to 4% by weight.

3,859,450
PROCESS FOR PREVENTING MELANOSIS IN SHELLFISH

Luis Gutierrez Alsina, Valencia, Spain, assignor to Barreiros Hnos, S.A. Financiera Alcala, Madrid, Spain

Filed May 8, 1972, Ser. No. 251,469
Claims priority, application Spain, May 7, 1971, 390948; Mar. 24, 1972, 401129
Int. Cl. A22c *29/00*
U.S. Cl. 426—268 **7 Claims**



1. A process for preventing melanosis in raw shellfish that are to be preserved by freezing, comprising the steps of, placing raw shellfish in a closable container, introducing into said container, before or after said step of placing the shellfish therein, an aqueous solution having a Ph within the range of 2 and 4, and selected from the group consisting of acqueous solutions of citric acid and/or ascorbic acid and/or tartaric acid, sufficient to cover completely the the shellfish in the container, but without filling the container, injecting gaseous carbon dioxide into the interior of said container, after it is closed and before or after said introduction of the aqueous solution thereto, until a pressure of between 3 and 6 kgs/cm² is reached, thereby to form carbonic acid in said solution; maintaining said predetermined pressure for a predetermined period of time, selected in accordance with the nature, origin and specific characteristics of said shellfish, which period of time is sufficient to completely impregnate the cephalothorax, gills and other parts of the shellfish with said carbonic acid and the acid in said solution, and thereafter reducing the pressure in said container, and removing the shellfish therefrom.

3,859,451
PREPARATION OF STABLE PROTEIN CONCENTRATES FROM GRAIN BY-PRODUCTS

Robert M. Saunders, Berkeley; George O. Kohler, El Cerrito; Margaret A. Connor, Concord, and Richard H. Edwards, Albany, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 283,690, Aug. 25, 1972. This application Sept. 24, 1973, Ser. No. 399,892
Int. Cl. A23j *1/12*
U.S. Cl. 426—364 **4 Claims**

1. A process for preparing a stable protein concentrate from wheat millfeed, said concentrate being useful as a human food supplement, which comprises

a. applying an aqueous alkalizer to the millfeed to adjust to a pH of 9,
b. pressing a juice containing soluble proteins therefrom,
c. acidifying the juice to pH 5.5 to 6.0,
d. coagulating a solid protein concentrate within the juice by applying steam to the juice until its temperature is raised to 85° C.,
e. separating the so-coagulated solid protein concentrate from the juice,
f. washing the solid protein concentrate with water, whereby to lower its ash content, and
g. drying the so-washed product.

3,859,452
METHOD FOR OBTAINING NIXTAMALIZED FLOURS

Fausto Celorio Mendoza, Cumbres de Acultzingo No. 185, Lomas-de-Chapultepec, Mexico 10, D.F., Mexico

Division of Ser. No. 268,482, July 3, 1972, abandoned. This application Apr. 22, 1974, Ser. No. 462,800
Int. Cl. A23l *1/10*
U.S. Cl. 426—375 **5 Claims**

1. A method of nixtamalizing corn flour which comprises; supplying the flour with lime admixed therewith to the lower region of a vertically extending treatment zone, moving air in said treatment zone from the lower region thereof upwardly to cause the flour to rise upwardly therein, supplying heat to said treatment zone to heat the flour to a predetermined temperature to drive water therefrom which will turn to steam and humidify the said air and moisten the lime and thereby effect treatment of the flour in said treatment zone, withdrawing treated flour and humid air at the upper region of said treatment zone, immediately supplying the thus withdrawn flour and humid air to a cooling zone, and cooling the withdrawn flour and humid air in said cooling zone to cause condensation of the steam and absorption of at least a substantial part of the resulting water in said cooled treated flour.

3,859,453
PROCESS FOR DRAINING AND DENSIFYING CHEESE CURD

Armand Francois Bronkhorst, Doorn, and Wilhelm Ludwig Heinrich Ernst Wurdemann, Driebergen, both of Netherlands, assignors to Holvrieka International N.V., Utrecht, Netherlands

Division of Ser. No. 125,217, March 17, 1971, Pat. No. 3,774,304. This application Sept. 4, 1973, Ser. No. 394,246
Claims priority, application Netherlands, Mar. 18, 1970, 7003851
Int. Cl. A23c *19/02*
U.S. Cl. 426—478 **1 Claim**

1. A process for densifying curd from a mixture of curd and whey comprising pumping a mixture of curd and whey into the bottom of an imperforate vertical channel and passing the mixture upward through the channel whereby curd is densified during its passage through the inperforate channel, transferring the densified curd, under force, from the upper end of the channel into at least one curd vessel and, after the curd vessel is filled, cutting and separating the curd transferred into the curd vessel from the curd remaining in the channel at a boundary plane between the upper end of the vertical channel and the lower end of the curd vessel,

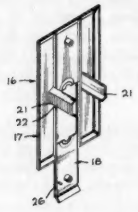
the curd vessel being pivotable in a horizontal circular course on an axis parallel to the axis of the channel for movement from a position in which it is filled from the channel to a position for discharge into a cheese receptacle and vice versa,

separating and discharging the whey substantially continuously from the level of the boundary plane between the upper end of the vertical channel and the lower end of the curd vessel, subjecting the curd to a compressive load in the vertical channel and the curd vessel, forcing the curd upwardly to the curd vessel while the vessel is positioned above the upper end of the vertical channel, pivoting the filled curd vessel to a position remote from the upper end of the vertical channel and discharging the compressed curd into a cheese receptacle.

3,859,454
COVER PLATE

Milton Mann, Los Angeles, Calif., assignor to Production Products, Inc., Sylmar, Calif.

Filed Sept. 13, 1973, Ser. No. 396,840
Int. Cl. H02g *3/14*
U.S. Cl. 174—66 **7 Claims**



1. A removeable cover plate for a cord outlet opening comprising:

a first body section adapted to cover a portion of said outlet opening and formed with an inlet at one of its edges, said inlet having a pair of parallel sides extending inwardly of said edge;

mounting means formed on the rear of said first section adapted to cooperate with the sides of said opening to releasably mount said first section over said opening;

a second slide section formed with a pair of parallel sides spaced to conform with the parallel sides of said inlet, said second section having a common parting line with said first section;

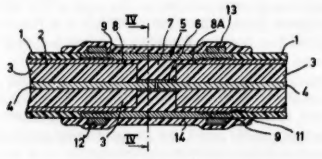
cooperating tongues and grooves formed on adjacent parallel sides of said first and second sections, said second section being slidingly inserted into said inlet to cover the remainder of said opening; and

a circular knockout and a plurality of annular knockouts concentric therewith formed in said first and second sections adjacent said common parting line and selectively removeable from said sections to provide a port through said cover plate of variable predetermined size for cords of varied diameters when said sections are attached.

3,859,455
CONNECTION OF COAXIAL CABLE ENDS

Hubertus Johannes Josephus Gommans, and Josephus Gerardus Henricus Stikkelbroeck, both of Edisonstraat, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,502
Claims priority, application Netherlands, Feb. 8, 1972, 7201608
Int. Cl. H02g *15/08*
U.S. Cl. 174—88 C **2 Claims**

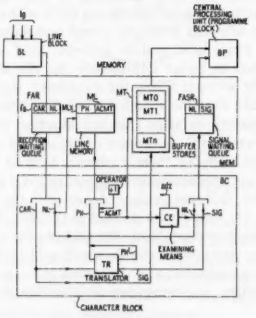


1. A connection between adjacent ends of coaxial cables electrically connecting conductors thereof, each of said cable ends having a central conductor, a dielectric surrounding said central conductor, a cylindrical outer conductor surrounding said dielectric and coaxial with said central conductor, said connection comprising an electrical conducting bush connecting the ends of the central conductors, an envelope of electrically insulating material enveloping said bush, hollow cylinders supported at both ends of said envelope made of the same material as said envelope receiving said cable dielectrics, said envelope having a wall thickness equal to the difference in thickness of the ends of the insulating envelope and the adjacent cable dielectric, shell shaped connection pieces of electrically conducting material having inwardly projecting parts connected between said cylindrical outer conductors of said cable ends and overlapping the ends of said outer conductors, and clamping means for securely connecting said shell-shaped pieces to the cylindrical outer conductors of each cable so as to insure secure electrical and mechanical connection.

3,859,456
SYSTEM FOR ANALYZING AND STORING TELEGRAPH CHARACTERS RECEIVED ON SEVERAL LINES

Thang Nguyen-Tat, Jouy-en-Josas; Roger Andre Pain, Vaires, and Jean-Claude Herluison, Argenteuil, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 11, 1973, Ser. No. 423,870
Claims priority, application France, Dec. 21, 1972, 72.45696
Int. Cl. H04l *17/00*
U.S. Cl. 178—3 **9 Claims**



1. A system for analyzing and storing telegraph characters received on several lines comprising:

a line unit coupled to said lines, said line unit detecting transitions in said characters and reconstituting said characters received on each of said lines;

a reception waiting queue coupled to said line unit, said waiting queue having memory cells each associated with a different one of said lines to store said characters of an associated one of said lines and an address identifying said associated one of said lines;

a central processing unit; and

a character block coupled between said waiting queue and said central processing unit, said character block including

a plurality of line memory cells;

a plurality of buffer stores, and

a sequential operation control unit coupled to said waiting queue, said line memory cells, said buffer stores and said central processing unit, said control unit taking one of said characters and the associated one of said addresses from said waiting queue, addressing one of said line memory cells in response to said associated

one of said addresses, reading into said one of said line memory cells a buffer store address and having access to that one of said buffer stores corresponding to said buffer store address to store therein said one of said characters for use by said central processing unit.

3,859,457

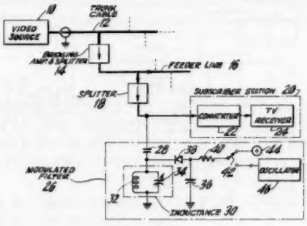
SELECTIVE VIDEO RECEPTION INHIBITING APPARATUS

Donald Kirk, Jr., St. Petersburg, Fla., assignor to Digital Communications Inc., St. Petersburg, Fla.

Continuation-in-part of Ser. No. 146,086, May 24, 1971, Pat. No. 3,730,980. This application Mar. 28, 1973, Ser. No. 345,684

Int. Cl. H04n *1/44*

U.S. Cl. 178—5.1 **16 Claims**



1. In combination, cable video propagating means, means connected to said cable means for supplying thereto at least one video signal, and video reception inhibiting means connected to said cable means for suppressing reception of said video signal on said cable means, said reception inhibiting means comprising electronically controlled variable attenuation filter means tuned to the spectrum of said video signal, said filter means including means exhibiting an attenuation dependent upon the value of an electronic control signal, and filter attenuation modulating signal generator means for supplying a control signal of relatively high frequency to said filter means for varying the attenuation characteristic of said filter means.

3,859,458

RECEIVER FOR RECEIVING A STILL PICTURE BROADCASTING SIGNAL

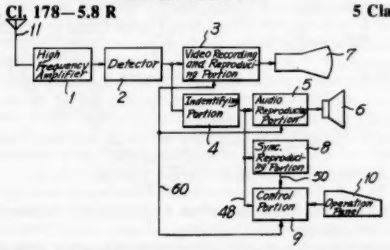
Teruhiro Takezawa; Michio Masuda, both of Tokyo; Hiroaki Nabeyama; Katsuo Mohri, both of Yokohama; Masaaki Fukuda; Tatsuo Kayano, both of Tokyo; Akio Yanagimachi, Kawasaki; Hisakichi Yamane, Tokyo; Eiichi Sawabe, Tokyo; Takashi Uehara, Tokyo, and Takehiko Yoshino, Yokohama, all of Japan, assignors to Hitachi Limited; Hitachi Electronics, Ltd. and Nippon Hoso Kyokai, all of Tokyo, Japan

Filed Aug. 30, 1973, Ser. No. 393,162

Claims priority, application Japan, Sept. 4, 1972, 47-87959

Int. Cl. H04n *5/44*

U.S. Cl. 178—5.8 R **5 Claims**



1. A receiver for receiving a composite signal comprising

a video signal representing a plurality of still pictures,

an audio signal representing a plurality of sounds and inserted in a plurality of channels in the form of a pulse code modulated and time division multiplexed signal,

a control signal including a program material identification signal consisting of a video identification number for identifying each video signal of each still picture and an audio channel number for identifying each audio signal inserted in each channel, a second control signal consisting of a number of rows each comprising an index for identifying each of a number of program materials composed of combinations of still pictures and sounds and the program material identification signal for identifying the program material denoted by said index and a first control signal consisting of a number of rows each comprising an index similar to said index of said second control signal and a plurality of indexes identifying a plurality of program materials for selecting given program materials from a number of program materials and for controlling progress of reproduction of the program materials in accordance with a predetermined rule, and

a synchronizing signal necessary for reproducing at a receiver end said video, audio and control signals, all of the above mentioned signals being arranged in a predetermined sequence at a period of a predetermined time interval, comprises

an operation panel operated for selecting said video and audio signals;

index denoting means for denoting an index by means of operation of said operation panel;

means for extracting from the composite signal each one row of said first and second control signals having the same index as that denoted by said index denoting means; storage means for storing said first and second control signals extracted by said extracting means;

signal producing means for producing a signal for extracting from the composite signal the video and audio signals having the video identification number and the audio channel number, respectively denoted by the second control signal stored in said storage means;

means for reproducing the video and audio signals extracted by means of said signal generated by said signal producing means; and

means for selecting one of the indexes included in said first control signal stored in said storage means by means of a command from said operation panel operated in accordance with information of said reproduced still picture and sound and for supplying the selected index to said index denoting means to renew the index denoted by said index denoting means.

3,859,459

FM DEMODULATOR CIRCUIT FOR A FACSIMILE SYSTEM

Herbert P. Ford, Jr., Orlando, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Feb. 16, 1973, Ser. No. 332,925

Int. Cl. H03d *3/00;* **H04b** *1/16;* **H04n** *1/40*

U.S. Cl. 178—6 **10 Claims**

1. A facsimile system for producing a copy at one location which is a facsimile of a document located at another location comprising:

a transmitter including: means for detecting the light-dark variations in a document, and means for generating FM signals having

different frequencies in response to the

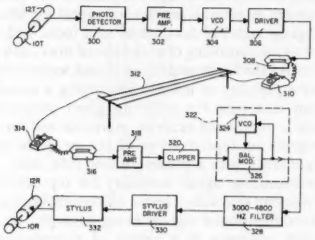
detected light-dark variations;

a communications network coupled to the transmitter for transmitting FM signals; and

a receiver coupled to the communications network and including:

a phase locked loop having a voltage controlled oscillator and a phase detector, said detector having a pair of

inputs and an output, an FM signal representing the information content of the document being applied to one of the inputs of the oscillating output of the oscillator being applied to the other of the inputs so as to generate a demodulated signal at the detector output having an amplitude representing the lightdark variations in the document being scanned at the transmitter, the output of the detector also being coupled to the oscillator so as to control the frequency of the oscillator, said detector being characterized by at least dou-



bling the fundamental frequency of the FM signal which pass to the output of the detector, and

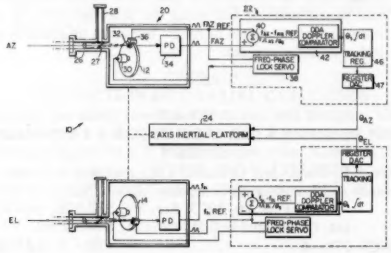
filter means coupled to the output of the detector for attenuating frequencies at least double the fundamental frequencies of the FM signals applied to said one input of said detector without substantial attenuation of frequencies less than the lowest fundamental of the FM signal supplied to said one input, and

writing means coupled to the output of said filter means for writing on a copy medium information representing the information content of the document.

3,859,460
PASSIVE IMAGE STABILIZATION SYSTEM

William E. Westell, Weston, Mass., assignor to Baird-Atomic, Inc., Bedford, Mass.

Filed Nov. 27, 1972, Ser. No. 309,625
Int. Cl. HO4n *5/34*
U.S. Cl. 178—7.2 **22 Claims**



1. An image stabilization system comprising:

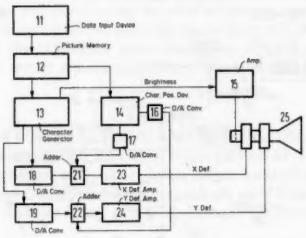
a. sensor means for imaging a field of view at a focal surface and for providing an optical image signal functionally related to motion of the representation of said field of view in said focal surface; and

b. sensor electronic means operatively connected to said sensor means for generating stabilization signals related to said sensor means signal, said sensor electronic means including threshold decision logic means having an established threshold level, said threshold decision logic means operating to control said stabilization signals, said stabilization signals generated by said sensor electronic means when said threshold level is exceeded before each zero crossing of said optical image signal.

3,859,461
OPERATIONAL METHOD FOR THE CONTROL OF A DEVICE

Wolfgang Wiedenmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 21, 1973, Ser. No. 362,201
Claims priority, application Germany, Aug. 28, 1972, 2242280
Int. Cl. G06f *3/00*
U.S. Cl. 178—30 **7 Claims**

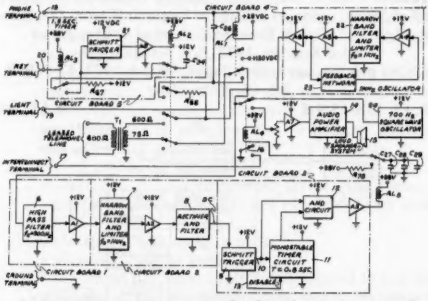


1. An operational method for the control of a device in dependency on an instruction word and a feature assigned to the instruction word, whereby the instruction word is supplied to a storer which subsequently releases, for each instruction word, a substitution address and at least one control word which serves for the control of the device, comprising the steps of combining all instruction words to which are assigned the same feature, into a single group, assigning to each such group a respective block in a store, storing in a register, until all control words assigned to an instruction word are conducted to the device, a syllable of such a substitution address, and utilizing such stored information in the register to control the device during the conduction thereto of such contre words.

3,859,462
ARRANGEMENT TO CONTROL A FUNCTION AT A REMOTE LOCATION

B. Ronald Saxon, Harrisburg, Pa., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 15, 1973, Ser. No. 388,674
Int. Cl. H04m *11/00*
U.S. Cl. 179—2 A **8 Claims**



1. An arrangement to control a function at a remote location comprising:

a telephone line having an operating frequency band interconnecting a local location and said remote location;

a source of sinewave audio frequency control signal disposed at said local location, said audio control signal having a given frequency;

first means coupled to said telephone line at said local location to inject said audio control signal into said operating frequency band of said telephone line for a given length of time to provide said audio control signal having a first given time duration;

second means coupled to said telephone line at said remote location to detect said audio control signal; and

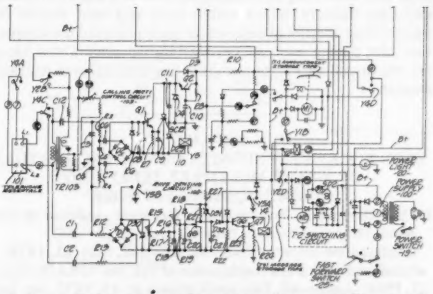
third means coupled to said second means at said remote location responding to said audio control signal only if said audio control signal exceeds a second given time duration less than said first given time duration by a given amount to control said function at said remote location and to reject all other audio signals having said given frequency and a time duration less than said second time duration regardless of how close said audio signals having said time duration less than said second time duration are spaced.

3,859,463

TELEPHONE ANSWERING SYSTEM AND APPARATUS INCLUDING IMPROVED RING RESPONSIVE CIRCUITRY FOR SELECTIVELY CONNECTING AND ISOLATING THE SYSTEM FROM THE TELEPHONE LINE

Lawrence A. Curtis, Garden Grove, Calif., assignor to T.A.D. Avanti, inc., Paramount, Calif.

Filed Apr. 30, 1973, Ser. No. 355,556
Int. Cl. H04m 1/64
U.S. Cl. 179—6 R **4 Claims**



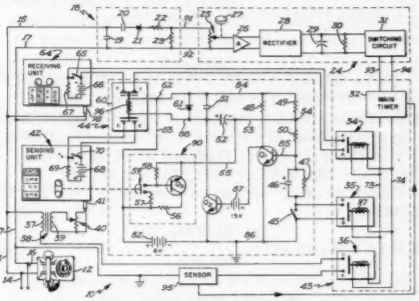
1. In a telephone answering system for responding to telephone messages received over a telephone line and which comprises an announcement storage means and a message storage means and respective associated transducers, and which further comprises first and second means for driving said announcement storage means and said message storage means respectively relative to said transducers for producing a recorded announcement on the telephone line from the announcement storage means during a first time interval in response to an incoming telephone call from a calling party, and for subsequently recording a message from the calling party on said message storage means during a second time interval, and which further includes first control circuit means for activating said announcement storage driving means in response to said incoming telephone call to produce said recorded announcement for transmission over the telephone line to the calling party during the first time interval, second control circuit means coupled to said announcement storage means for activating said message storage driving means at the termination of the announcement so as to initiate the recording of the aforesaid message from the calling party on the message storage means, a transformer having a first, a second and a third winding, and an audio-amplifier having its output connected to the second transformer winding and its input connected to the third transformer winding, means controllably coupling the input of the audio-amplifier to said announcement storage means for introducing the announcement thereon to the telephone line during said first time interval, and means controllably coupling the output of the audio-amplifier to said message storage means for introducing the message received over the telephone line from the calling party to said message storage means during the second time interval; the combination of a ring signal sensing circuit, a relay having normally-open contacts and normally-closed contacts, and further having an energizing coil connected to said ring signal sensing circuit to be actuated thereby to close the normally-open contacts thereof and connect said first winding of said transformer to the telephone line in response to a ring signal received over the line and introduced to said ring sensing circuit, capacitive means coupling said ring sensing circuit through the normally-closed contacts of said relay to the telephone line and presenting relatively low impedance to said ring signal to pass said ring signal to said ring sensing circuit so as to cause said ring sensing circuit to actuate said relay in response to said ring signal; third control circuit means responsive to a change in signal level on the telephone line for controlling said relay to open said normally-open contacts thereof and disconnect said first winding of said transformer from the telephone line and thereby isolate said audioamplifier from the telephone line should communication with the calling party be interrupted during the first or second time interval; capacitive means directly coupling said third control circuit means to said first winding of said transformer and to said normally-open contacts of said relay; and circuit means connected to said first control circuit means and to said third control circuit means to deactivate said ring sensing circuit for the duration of said first time interval whenever said third control circuit means is activated during said first time interval.

3,859,464

ELECTRICAL CIRCUIT FOR A PHONE ANSWERING DEVICE

Phillip W. Seamans, Rt. No. 1, Box 116, Rogers, Minn. 55374

Filed Jan. 29, 1973, Ser. No. 327,751
Int. Cl. H04m 1/64
U.S. Cl. 179—6 R **5 Claims**



1. An electrical telephone answering device usable with an electrical power source to receive electrical ringing signals and messages from the electrical terminals of a telephone and to deliver messages thereto, comprising:

a main electrical timing circuit connectable with the power source and including a main timer with input and output terminals, said main timer defining a first predetermined time interval when actuated by a predetermined signal and said main timing circuit further including first and second electrical relay switches, each having a pair of normally open switch terminals and a holding coil, each holding coil electrically connected to the output terminals of said main timer and energized by said main timer during said first predetermined time interval to close said switch terminals of said first and second relay switches during said first predetermined time interval;

a message receiving unit operatively electrically connectable to the terminals of the telephone for receiving messages from the telephone terminals, said message receiving unit being electrically connectable to the power source and electrically connected with the switch terminals of one of said electrical relay switches of said main timing circuit to energize said message receiving unit from the power source to record the message of a caller when said relay switches of said main timing circuit are closed;

a message sending unit operatively electrically connectable to the power source and having a message output connected in a series circuit passing through the switch terminals of one of said electrical relay switches of said main timing circuit and connectable across the telephone terminals when the said relay switches of said main timing circuit close so as to deliver a message to the telephone terminals;

a ringing signal counter electrically connectable with the terminals of the telephone and the power source, and electrically connected to the input terminals of said main timer to deliver said predetermined signal to said main timer in response to receiving of a predetermined number of ringing signals from the terminals of the telephone; and a second electrical timing circuit connectable to the power source and defining a second predetermined time interval, said second timing circuit electrically connected to the switch terminals of one of said relay switches of said main timing circuit and actuated by closing of said relay swtiches of said main timing circuit to begin timing of said second predetermined time interval, said second timing circuit including a relay switch having normally open switch terminals and a holding coil, said holding coil electrically connected in said second timing circuit to be energized for closing said switch terminals during said second predetermined time interval, said relay switch of said second timing circuit having its switch terminals operatively electrically connected to said message sending unit and connectable to the energy source to conduct electrical energy from the energy source to the sending unit to energize said sending unit when said relay switch terminals of said second timing circuit close during said second predetermined time interval.

3,859,465

DATA TRANSMISSION SYSTEM WITH MULTIPLE ACCESS FOR THE CONNECTED USERS

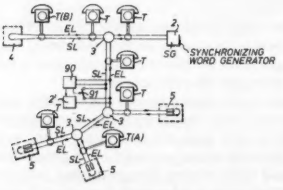
Klaus Dieter Schenkel, Senden, and Rudolf Schehrer, Geislingen/Steige, both of Germany, assignors to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 23, 1973, Ser. No. 335,180

Claims priority, application Germany, Feb. 23, 1972, 2208396

Int. Cl. H04j *3/08*

U.S. Cl. 179—15 AL **11 Claims**



1. In a time-division multiplex multiple access (TDMA) data transmission system connected in a communication network having a plurality of branches and including: a plurality of nodes interconnecting the plurality of branches so as to form an interconnecting system of all of the individual user stations, each of the branches having first and second transmission lines; connecting means directly connecting the first and second transmission lines at one point in the system so as to enable data to be transferred from one line to the other; the first transmission line constituting a transmitting line for transmitting data to a next succeeding node in a direction towards the point at which the first and second lines are connected, and the second transmission line constituting a receiving line for carrying data from the respective succeeding node in a direction away from the point of connection of the first and second transmission lines; and generating means connected in the system for periodically transmitting synchronizing words; each user station being arranged to divide the interval between successive synchronizing words into *n* equal time slots; the improvement wherein said system comprises: transmitting means connected within each of the user stations for transmitting a test block signal over said transmitting line in a presently free time slot, of the *n* time slots, in order to establish connection with another user in the system; priority means connected within each of said nodes for delaying the time of transmission of the test block signal when such signal arrives at its respective node simultaneously with a signal from another user; monitoring means connected within each of said user stations for monitoring the signal flow on said receiving line and for determining if the transmission of the test block transmitted by it has been delayed; control means within each of said user stations, connected to said monitoring means, for transmitting a further test block within a time interval delayed with respect to the interval in which the previous test block signal was transmitted when it is determined that the transmision of the previously transmitted test block signal has been delayed until the transmission of a transmitted test block signal returns to the associated user station without any delay in its transmission, thus indicating an unoccupied time slot has been found; and data delivery means within each said user station for transmitting additional data within such a delayed unoccupied time slot during each successive interval after a test block returns to said user station without any such delay in its transmission.

3,859,466

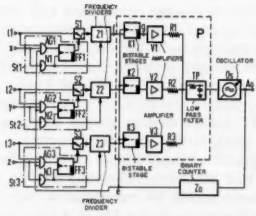
RECIPROCAL SYNCHRONIZATION OF OSCILLATORS OF A TIME MULTIPLEX TELEPHONE COMMUNICATION NETWORK

Lothar Hartmann, Braunschweig, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation-in-part of Ser. No. 256,199, May 23, 1972, abandoned, which is a continuation of Ser. No. 779,420, Nov. 27, 1968, abandoned. This application Apr. 19, 1973, Ser. No. 352,458

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BS **9 Claims**



1. A method for reciprocally synchronizing oscillators provided in each of a plurality of exchange stations of a time multiplex long distance communication network, each said oscillator emitting synchronizing pulses in time slots usable for signal transmission in the exchange station, of which the said oscillator is a part, by employing a discriminator at each exchange station to which are applied synchronizing pulses of the oscillator pertaining thereto and synchronizing pulses of

oscillators provided in other exchange stations connected therewith and which applies to the oscillator pertaining thereto a control potential to cause a change in the oscillating frequency of said oscillator comprising:

applying the synchronizing pulses emitted by the oscillator in a given exchange station and the synchronizing pulses transmitted by the oscillators of other exchange stations to frequency dividing means connected to inputs of the discriminator of each said exchange station,

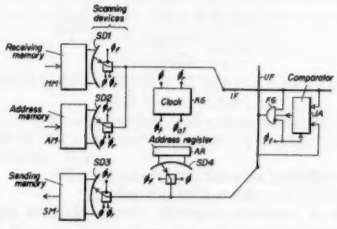
selectively starting or terminating application of output signals from said frequency dividing means to the discriminator after receipt of a specified number of synchronizing pulses by the frequency dividing means,

emitting output signals from the frequency dividing stages receiving synchronizing pulses from other exchange stations to the discriminator in said given exchange station with termination of the emission of a corresponding output signal from a further frequency dividing means connected to the oscillator provided in said given exchange station.

3,859,467
METHOD OF OPERATING FILE GATES IN A GATE MATRIX

Gert Ove Borgstrom, Hagersten, and Walter Ghisler, Upplands Vasby, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Apr. 30, 1973, Ser. No. 355,418
Claims priority, application Sweden, May 18, 1972, 6514/72
Int. Cl. H04j *3/12*
U.S. Cl. 179—15 BY **8 Claims**



1. In a PCM exchange utilizing a time division multiplex system and having a file gate matrix through which each of the PCM words is transmitted serially during an associated time slot from a file side with files coming in to the matrix to a file side with files going out from the matrix; and wherein in every time slot each incoming file is connected to an outgoing file by means of one of the file gates arranged in the crossing points of the gate matrix, a method for operating the file gates comprising the steps of:

dividing each time slot into an address phase followed by a PCM phase,

transmitting the PCM words to and from, respectively, the matrix in the PCM phases,

transmitting in the address phases addresses, each of which defines one of the files on the files of the two file sides, to the matrix in such a way that each file on the one file side transmits an address defining a file on the other file side and that each file on the other file side transmits its own address,

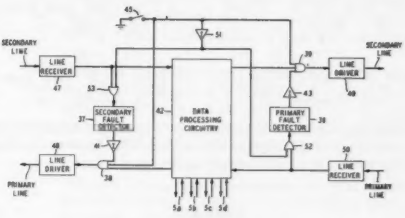
comparing in each address phase in each of the crossing points the address transmitted on the one file side with the address transmitted on the other file side,

and activating, during each PCM phase, the file gates connected to such files crossing each other to which identical addresses were transmitted during the address phase associated with said PCM phase.

3,859,468
REDUNDANT DATA TRANSMISSION ARRANGEMENT

Nicholas Kimbrough Smith, Naperville, and James Bartel Truesdale, Lombard, both of Ill., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed July 25, 1973, Ser. No. 382,476
Int. Cl. H04j *3/14*
U.S. Cl. 179—15 AL **11 Claims**



9. In a data transmission arrangement which comprises first and second transmission lines, a base terminal connected to said transmission lines for transmitting time-divided signals in a first direction on said first line and in a second direction on said second line, a plurality of transmission terminals serially connected in both of said transmission lines and a fault isolation arrangement for isolating transmission line faults by opening the serial connection of said first line and connecting said first line to said second line in the transmission terminal adjacent to the fault on one side and opening the serial connection of said second line and connecting said second line to said first line in a transmission connecting said second line to said first lin in a transmission terminal adjacent to said fault on the other side; a reconfiguration arrangement, comprising:

means located in said base terminal for momentarily interrupting the time-divided signals on both of said first and said second transmission lines and wherein said transmission terminals further comprise:

a register circuit for generating state signals indicating that the transmission terminal associated therewith is adjacent to a fault;

a restart arrangement responsive to said state signals and to the interruption of signals on both said first and said second lines for generating and transmitting restart signals on both said first and second lines; and

circuit arrangements responsive to said restart signals for disconnecting interconnections between said first and said second lines and for reestablishing the serial connection of said terminals.

3,859,469
COMBINATION HYBRID AND FREQUENCY DIVISION MULTIPLEXING CIRCUIT

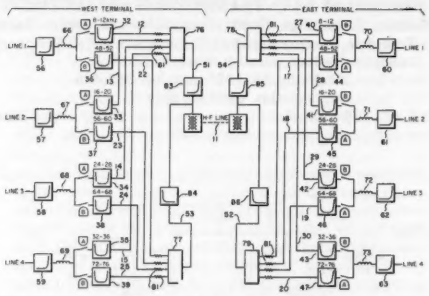
Lawrence E. Getgen, Redwood City, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Continuation-in-part of Ser. No. 349,572, April 9, 1973, Pat. No. 3,833,772. This application Aug. 29, 1973, Ser. No. 392,720
Int. Cl. H04j *1/06*
U.S. Cl. 179—15 AA **29 Claims**

27. The method of obtaining a combination resonant transfer hybrid and frequency-division multiplex function in a two-way communication system having a plurality of lines and comprising:

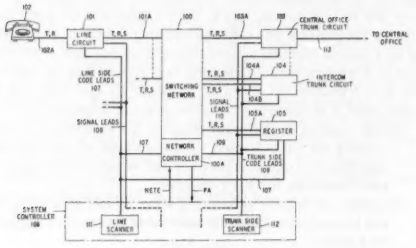
effecting a hybrid separation of each of said lines by resonant transfer between line lowpass filters and transmit and receive path bandpass filters by sampling in said paths at a sampling frequency of at least two times the

highest line frequency of interest; and



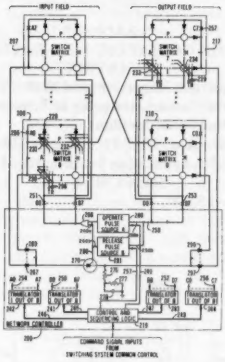
selecting passbands for at least certain of said transmit and receive path bandpass filters which differ from each other by multiples of said sampling frequency.

3,859,470
COMMUNICATION SWITCHING NETWORK
Robert George Dittrich, Boulder, and Louis Emanuel Thelemaque, Longmont, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 1, 1972, Ser. No. 311,167
Int. Cl. H04q 3/42
U.S. Cl. 179—18 EA **15 Claims**



3. In a switching system having a multistage network, said network having a line side stage and a trunk side stage, a network controller, a plurality of path segments in each of said stages, an idle state determining means for each of said path segments, circuits connected to said line side and trunk side stages, means for transmitting signals to said controller specifying two of said circuits that are to be interconnected by the establishment of a path through said network, means including said controller responsive to the reception of said signals for propagating a unique path defining potential through the determining means of each idle path segment extending through said line side stage to which one of said specified circuits is connected, means for extending each of said unique path defining potentials from said determining means of said line side stage to said trunk side stage to which the other one of said specified circuits is connected, means for propagating each of said unique path defining potentials from said last named determining means through the determining means associated with idle path segments of said trunk side stage to which said other specified circuit is connected, means effective upon the propagation of each of said unique path defining potentials through said last named determining means for extending said last named potentials over separate conductors to said controller, and means independent of said determining means and responsive to the reception of said signals and one of said last named potentials by said controller and exclusive of any further determining means for directly establishing a network connection simultaneously in all stages between said specified circuits over the idle path segments defined by said last named one potential.

3,859,471
REED SWITCH COMMUNICATION NETWORK ENSURING OPEN CONTACTS BEFORE CLOSURE
Daniel Danielsen, and Raymond Waibel Ketchledge, both of Wheaton, Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 29, 1973, Ser. No. 364,978
Int. Cl. H04m 1/52
U.S. Cl. 179—18 GF **9 Claims**



1. A switching network comprising:

a plurality of switches each comprising:

a pair of remanent magnetic circuit members; a pair of switch contacts disposed respectively on said pair of circuit members; a first control winding comprising serially connected first and second coils wound around one of said circuit members and the other of said circuit members respectively; a second control winding comprising serially connected first and second coils wound respectively around said other of said circuit members and said one of said circuit members respectively;

said first and second coils around each said circuit member proportioned and of winding senses such that said first and said second control windings, when energized simultaneously, generate magnetic fields which tend to effect closure of said switch contacts and such that fields of either said first or said second control winding alone tend to effect opening of said switch contacts;

said first and said second control windings of said plurality of switches serially connected respectively in rows and columns;

means for selectively generating contact closing magnetic fields for said switches comprising: means for serially connecting said rows and columns; and means for applying signals selectively to said rows and columns;

characterized in that

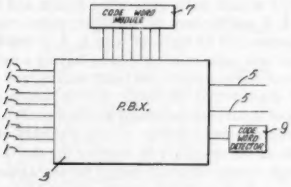
said switching network further comprises means for generating contact opening magnetic fields in switches selected to be closed immediately prior to generation of said contact closing magnetic fields.

3,859,472

CODE MODULE FOR SUBSCRIBER TERMINALS

Solomon Bertram Matthews, Montreal, Quebec, Calif., assignor to Automatic Electronic Systems, Montreal, Quebec, Canada

Filed Dec. 17, 1973, Ser. No. 425,066
Int. Cl. H04q *3/72*
U.S. Cl. 179—18 FH **8 Claims**



1. Apparatus for injecting a different unique identifying code word on each of a plurality of telephone subscriber terminals of a private branch exchange telephone system, having a smaller plurality of outside trunk lines, said apparatus comprising:

a code module having a plurality of outputs;

said plurality of outputs being at least equal to said plurality of telephone subscriber terminals;

each one of said plurality of outputs being connected to a different one of said plurality of telephone subscriber terminals; and

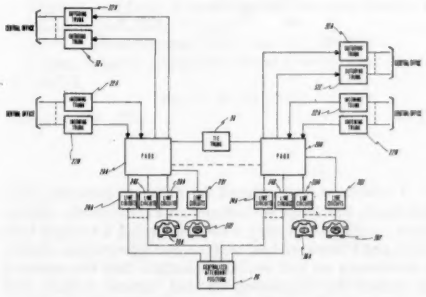
means in said code module for generating a different unique identifying code at each one of said plurality of outputs, whereby a different unique identifying code is applied to each one of said plurality of subscriber terminals.

3,859,473

CENTRALIZED ATTENDANT SERVICE ARRANGEMENT FOR PABX COMPLEX

Wilbert C. Brown, Penfield, and Arthur E. Hoctor, Rochester, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed July 31, 1973, Ser. No. 384,336
Int. Cl. H04m *3/00*
U.S. Cl. 179—27 CA **6 Claims**



1. A centralized attendant service arrangement for use with a plurality of private automatic telephone systems:

each of the telephone systems including at least first and second groups of line circuits, each of the first groups of line circuits including at least one subscriber line circuit; at least one incoming trunk circuit extending to a central exchange;

connecting means for interconnecting the line circuits, and common control means responsive to multi-digit signals received from a calling line circuit for actuating the connecting means to interconnect the calling line circuit and a called line circuit designated by the multi-digit signals;

the centralized attendant service arrangement comprising:

a plurality of attendant positions disposed substantially in a single location and arranged to provide operator services for incoming calls to the automatic telephone systems, each of the attendant positions being connected to one of the line circuits in the second groups of line circuits and at least one of the second groups of line circuits in each private automatic telephone exchange being connected to at least one attendant position;

routing means within each private automatic telephone exchange responsive to the seizure of an incoming trunk circuit for an incoming call for automatically establishing a connection from the incoming trunk circuit via the connecting means to one of the line circuits in a second group of line circuits, whereby the incoming call is automatically extended to an attendant position following seizure of an incoming trunk by an incoming call;

sequence control means responsive to an attempt to effect a connection to a busy attendant position for automatically releasing the attempt and attempting a connection to an other attendant position;

first switching circuit means responsive to a signal generated at the attendant position for connecting a holding circuit to the calling line and interrupting the connection between the calling line and the attendant line circuit;

second switching circuit means for connecting each incoming trunk, from which an incoming call has been extended to an attendant position, to the common control means, and

bridge circuit means in each incoming trunk connected to the attendant position, arranged to be connected to the common control means by the second switching means and arranged to transmit multi-digit calling signals from the attendant position to the common control means after the second switching means connects the bridge circuit means to the common control means, whereby the connecting means interconnects an output of the incoming trunk and the called line circuit designated by the multi-digit signals transmitted from the attendant position.

3,859,474

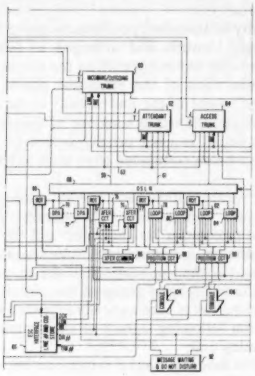
PRIVATE AUTOMATIC BRANCH EXCHANGE WITH CENTRAL OFFICE FEATURES

Klaus Gueldenpfennig, Penfield; Uwe A Pommerening, Webster, and Stanley L. Russell, West Webster, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,518
Int. Cl. H04m *3/64*
U.S. Cl. 179—27 DA **25 Claims**

23. In combination with a central office including a line link network, a service link network, a trunk link network, a plurality of registers, a plurality of junctors, a plurality of subscriber line circuits and a plurality of trunk circuits, and common control means for interconnecting said plurality of subscriber line circuits through a junctor and said service link network to a selected register, to one another through said line link network and a junctor and to a trunk circuit through said line link network, a junctor and said trunk link network, an operator control arrangement comprising an operator service link network, a plurality of operator position circuits, an oper-

ator console connected to each operator position circuit and additional common control means for selectively connecting



said operator position circuits through said operator service link network to a selected trunk circuit.

3,859,475

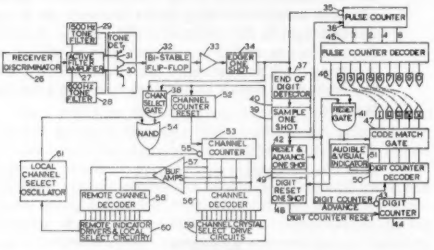
DECODER CHANNEL SELECTOR AND ENUNCIATOR SYSTEM IN AN AIRBORNE RADIOTELEPHONE SYSTEM

Paul G. Wulfsberg, Overland Park; Dennis L. Frederickson, Leawood, and John R. Alden, Alothe, all of Kans., assignors to Wulfsberg Electronics, Inc., Overland Park, Kans.

Filed Oct. 19, 1972, Ser. No. 299,075

Int. Cl. H04m *5/08*

U.S. Cl. 179—41 A **8 Claims**



1. In a radiotelephone system for two-way public communication between mobile radiotelephones and call stations interconnectable with telephone telecommunication networks and having a common selective calling and channel code transmit frequency that all mobile radiotelephones of the system are tuned to, and a plurality of two frequency receiver/transmitter talking channels: a mobile radiotelephone having a receiver circuit and a transmitter circuit and responsive to a predetermined selective calling and channel code format; selective calling code specific mobile radiotelephone identifying and responsive decoder and indication activation system means; channel selection means connected to said decoder and indication activation system means via channel select gate means also connected to pass channel code signals when gate activated by said decoder and indication activation system means; channel counter means connected to an output of said gate means and having a plurality of outputs; of a channel decoder connected to said plurality of outputs of said channel counter and having a plurality of individual channel frequency drive output circuits connected to modulate said receiver circuit and said transmitter circuit; microphone means connected to said transmitter and speaker means connected to said receiver for conducting two-way telephone calls from said mobile radiotelephone with said call stations on a selective call basis; wherein said predetermined selective calling and channel code format utilizes pulses generated from tone transitions between at least two preselected frequencies modulated on said common selective calling and channel code transmit frequency with pulse generating means; pulse counter means connected to said pulse generating means and having a four wire **1, 2, 4** and **8** count BCD output; pulse counter decoder means connected to the four wire **1, 2, 4** and **8** count BCD output of said pulse counter means, having a pulse count "1" output line connected to reset gate means, and having a plurality of digit output terminals; a code match gate having a plurality of input terminals hard wired in predetermined order to a predetermined number of said plurality of digit output terminals as the specific call number for the radiotelephone; and a digit counter decoder circuit having a plurality of input connections from said code match gate and an output connection as the decoder and indication activation system means connection to said gate.

3,859,476

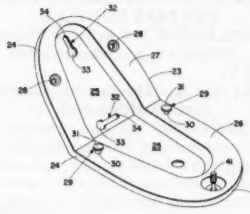
TWO POSITION MOUNTING FOR TELEPHONE SETS

Ronald Joseph Morrell; Graham Sterling Laing, and Bev William Gumb, all of London, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Canada

Filed Aug. 16, 1973, Ser. No. 389,016

Int. Cl. H04m *1/04*

U.S. Cl. 179—100 C **6 Claims**



1. A telephone unit adapted for alternate mounting on a substantially horizontal surface and on a substantially vertical surface, said unit including a housing having a forward base surface and a rearward base surface, the forward base surface for positioning on said horizontal surface and the rearward base surface for positioning on said vertical surface, said forward base surface subtending an obtuse angle relative to said rearward base surface; a bracket adapted for positioning against said base surfaces and said vertical surface; and interengaging means on said bracket and said housing to retain said housing on said bracket; said interengaging means comprising studs on one of said housing and said bracket and slots in the other of said housing and said bracket, said studs including enlarged head portions for engagement in said slots; said bracket including means for attachment of said bracket to said vertical surface.

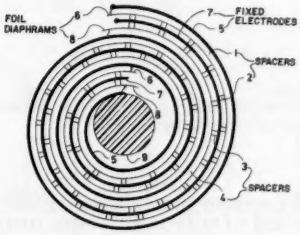
3,859,477
ELECTROSTATIC TRANSDUCER

Zdenek Skvor, Praha, Czechoslovakia, assignor to Tesla, narodni podnik, Praha, Czechoslovakia

Continuation of Ser. No. 156,316, June 24, 1971. This application July 18, 1973, Ser. No. 380,497

Int. Cl. H04r *19/00*

U.S. Cl. 179—111 R **10 Claims**



1. An electrostatic transducer capable of receiving and transmitting, comprising an assembly of a pair of elongate fixed electrodes, alternating with a pair of conforming diaphragms and two pairs of similarly elongate dielectric strip spacers, said assembly being convoluted into a tight spirally wound cylinder having the electrodes, and diaphragms alternating successively from the center to the outer periphery thereof, each separated by a spacer strip in contiguous contact therewith, said spacer strips being constructed in the configuration of a unitary comb-like structure to provide in said tight spirally wound cylinder a plurality of separated ports being open to free space on one plane which would lie on a base, herein termed frontal end, of said cylinder and closed on another plane which would lie on the opposite base, herein also termed frontal end, of said cylinder for each spacer strip, said ports providing a free space between successive radial convolutions of said electrodes and diaphragms, the accoustic input/outputs of said transducer being said ports.

3,859,478
CARBON MICROPHONE

William Donald Cragg, Harlow; Anthony Newton Lawson, London, and Henley Frank Sterling, Great Denmow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 21, 1973, Ser. No. 399,598

Claims priority, application Great Britain, Nov. 24, 1972, 54314/72

Int. Cl. H04h *21/02*

U.S. Cl. 179—122 **4 Claims**

1. A carbon microphone comprising:

a mixture of carbon granules and aggregated particles of a dry powder lubricant;

said aggregated particles forming individual masses of between one and **10** microns in size and not exceeding 2 percent of weight of the mixture.

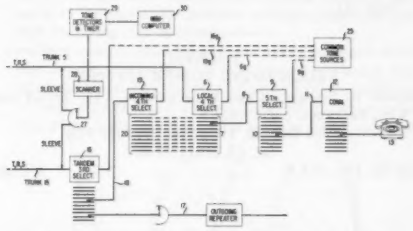
3,859,479
MONITORING ARRANGEMENT FOR A STEP-BY-STEP SWITCHING TRAIN

Amos Edward Joel, Jr., South Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 29, 1973, Ser. No. 364,937

Int. Cl. H04m *3/24*

U.S. Cl. 179—175.21 **18 Claims**



1. In a step-by-step switching train having a dial pulse responsive selector switch including a slow release relay one of whose contacts normally applies a temporary holding ground potential to the sleeve lead of prior stages of the switching train, the arrangement comprising

path means including said contact for superimposing a unique identifying audio frequency tone over said ground potential applied to said sleeve lead, and means for scanning a preceding stage of said switching train to detect said tone.

3,859,480
LOUDSPEAKER AND ATTACHMENT FITTING

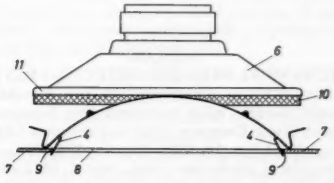
Udo Birkner, Heinde, and Gunter Fritsch, Hildesheim, both of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed June 6, 1973, Ser. No. 367,392

Claims priority, application Germany, July 1, 1972, 2232408

Int. Cl. H04r *1/02*

U.S. Cl. 179—178 **13 Claims**



1. A fitting to secure a loudspeaker (**6**) to a sound board (**7**) formed with a sound opening (**8**), comprising

a sheet (**2**) of thin, springy sheet material which, in unstressed state, is bowed, and when stressed and flattened has an outline extending at least in part to the outline of the cage of the loudspeaker, the sheet having a sound opening zone similar to the sound opening of the sound board;

means securing said sheet (**2**) to two opposed lateral sides of the loudspeaker (**6**) including at least one outer spring clip (**3**) projecting away from the convex surface of the bowed sheet and at the side of the sheet which extends parallel to the bend axis of the bowed sheet;

and means to attach said sheet (**2**) to the sound board (**7**) including at least one inner hook (**4**) projecting away

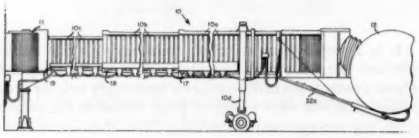
from the concave surface of the bowed sheet at the sound opening zone and located nearest to said side of the sheet which extends parallel to the bend axis of the bowed sheet, the hook (4) being bent over said sheet and away from said sound zone to permit fitting of the bowed sheet, with the concave surface against the sound board (7) and engagement of the hook through the sound opening (8) of the sound board (7) and over the edge (9) thereof and upon stretching and flattening of the sheet by contact of the convex surface with the loudspeaker cage, engagement of the edge of the cage of the loudspeaker with the clip (3).

3,859,481

TELESCOPING POWER SUPPORT

Stephen B. Sprague, Copa Ladeene Apt. 244, 23920 Anza Ave., Torrance, Calif. 90505

Filed Oct. 29, 1973, Ser. No. 410,908
Int. Cl. H02g *11/00*
U.S. Cl. 191—12 R **8 Claims**



1. Apparatus for supporting an electric cable or hose along an extendable structure leading to a parked aircraft from an airport terminal building, the combination comprising an extendable cable support attached to the outside of the structure, said cable support being extended when the structure is extended, a plurality of depending trolleys movable on said support, said cable support comprising a plurality of telescoping channel members, each of said channel members having track means for supporting said depending trolleys, the outer one of said telescoping channel members having additional track means, means attached to an inner one of said telescoping members movably engaging said additional track means of said outer one of said telescoping members for supporting said inner one of said telescoping members, said inner one of said telescoping members having additional track means and means attached to the innermost one of said telescoping members for movably supporting said innermost one of said telescoping members on said last mentioned additional track means.

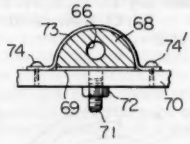
3,859,482

MECHANICAL PRESSURE DETECTING DEVICE

Shunji Matsui; Kenzo Hirashima; Yoshikazu Hayakawa, and Nagayuki Marumo, all of Yokohama City, Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed Feb. 24, 1972, Ser. No. 228,975
Claims priority, application Japan, Mar. 4, 1971, 46-13483; May 28, 1971, 46-44004; July 23, 1971, 46-45837; Oct. 5, 1971, 46-9157; Oct. 25, 1971, 46-98827; July 21, 1971, 46-64469; June 24, 1971, 46-45837; June 25, 1971, 46-46107
Int. Cl. H01h *3/00*
U.S. Cl. 200—61.08 **7 Claims**

1. A mechanical pressure detecting device comprising electrically conductive means which is deformable by a mechanical pressure greater than predetermined magnitude which is applied to said detecting device to generate an electric signal, an insulating support element receiving therein said electrically conductive means and insulating the same, and a presser member shaped in the form of a plate and positioned to be in contact at an internal surface with an external surface of said insulating support element and directly receiving a mechanical pressure applied to said detecting device, said presser member being deformed when subjected to said mechanical pressure greater than said predetermined magnitude to deform said insulating support element thereby causing the



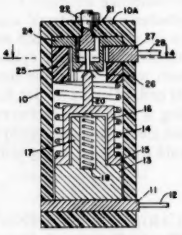
deformation of said electrically conductive means and the generation of said electric signal.

3,859,483

INERTIA SENSING SWITCH WITH CONDUCTIVE CATCH RIM MEANS FOR RETAINING MOVABLE CONTACT IN CLOSED POSITION

Gregory L. Laserson, Scarsdale, and Harry W. Hopper, Jr., Pleasantville, both of N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.

Filed May 2, 1973, Ser. No. 356,575
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 R **11 Claims**

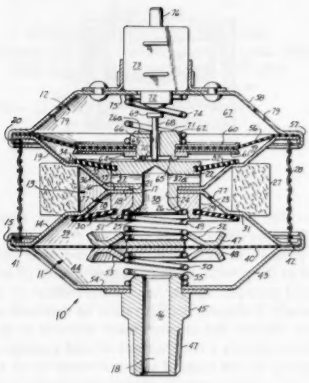


1. An inertia operated switch for connecting two contacts mounted in spaced relation after the switch has been stopped comprising: a housing made of insulative material and including first and second electrical terminals secured in spaced relation; a primary conductive mass axially movable within the housing and normally in contact with said first terminal; said primary conductive mass having an axial cavity therein; a secondary conductive mass also axially movable within the housing; a first resilient expansion means mounted between an insulator ring in the housing and a flange on said secondary conductive mass to normally maintain the two masses in contact with each other and the primary mass in contact with the first electrical terminal; a second electrically conductive resilient expansion means disposed in the axial cavity of the primary conductive mass and mounted between the two masses for moving them apart, said second resilient means having less force than the first resilient means; a conductive latch secured to said secondary mass in axial alignment with the housing; a conductive ring secured to one end of the housing and connected to the second electrical terminal; said conductive ring including a resiliently deformable catch rim adapted to retain the latch in its operated position whenever the latch is forced through the rim due to the deceleration of the housing above a predetermined value.

3,859,484
CYCLIC PRESSURE SWITCH WITH PLURAL DIAPHRAMS

Robert E. Nelson, Rt. No. 1, Box 215, Willow Springs, Rosamond, Calif. 93560

Filed Sept. 10, 1973, Ser. No. 395,520
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 Y **31 Claims**



1. An undulating fluid pressure responsive device comprising:

a reciprocable element having two sides maintained out of communication with each other;

means adapted to provide fluid communication between a first of said sides and a body of fluid subject to undulating pressure which can reciprocate said reciprocable element in opposite directions, the other of said sides forming part of the wall of a fluid pulse generating chamber whose volume is changed by the reciprocation:

means for developing an output pulse of fluid pressure each time the reciprocable element moves in a first of said directions;

means for permitting fluid flow from a source of fluid into said pulse generating chamber each time the reciprocable element moves in a second of said directions;

a fluid pulse accumulating chamber in communication with said pulse generating chamber to accumulate the generated pulses;

valve means between the fluid source and the accumulating chamber preventing the return of fluid from the accumulating chamber to the fluid source;

a fluid displaceable element forming part of the wall of the accumulating chamber and

bleed passageway means providing communication between said accumulating chamber and said fluid source thereby permitting flow of fluid from said accumulating chamber at a rate sufficient to prevent a substantial displacement of said displaceable element when the fluid pulse output of said pulse generating chamber is not both strong and sustained.

3,859,485
OCCUPANT SENSOR SEAT SWITCH

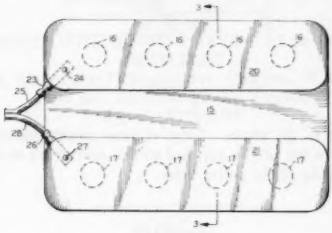
Paul J. Blinkilde, Lathrup Village, and Floyd J. Sandi, Clawson, both of Mich., assignors to Essex International, Inc., Fort Wayne, Ind.

Filed Feb. 26, 1973, Ser. No. 335,786
Int. Cl. H01h *3/14*
U.S. Cl. 200—85 A **4 Claims**

1. A flexible pressure sensitive switch for sensing the presence of an occupant in a vehicle seat, said switch comprising: first and second flexible, sheet-like, relatively strong laminates each comprising a film of insulation material having a thin conductive coating on one side;

a flat electrically nonconductive body of resilient compressible foamed material interposed between said first and second laminates, the upper surface of said body being adhesively bonded to the conductive coating of said first laminate and the lower surface of said body being adhesively bonded to the conductive coating of said second laminate, said body having a set of at least two longitudinally spaced openings each extending from said upper surface to said lower surface, each of said openings being open to the respective portions of said conductive coatings overlying said openings;

a resilient compressible contact pad occupying each of said openings in said body, each said contact pad being made of an elastomer with conductive particles dispersed therethrough such that said contact pad is electrically conductive when compressed above a predetermined value and



electrically nonconductive when uncompressed, each said contact pad having end portions facing the respective conductive coatings on said laminates for conductive connection therewith so that pressure applied to a localized portion of said first laminate overlying said contact pad will result in compression of said contact pad between the respective conductive coatings of said laminates to provide a bridging conductive path therebetween, said body normally maintaining said laminates in a spaced relation such that each said contact pad is maintained in a substantially uncompressed condition in the absence of pressure applied directly against said localized portion of said first laminate overlying said contact pad; and means for making external elelctrical connection to said conductive coatings whereby the application of pressure against any of said localized portions of said first laminate overlying said contact pads completes a ciricuit to said external connection means.

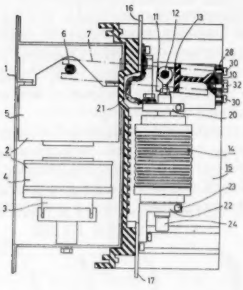
3,859,486
ELECTRIC VACUUM SWITCHING UNIT HAVING A POWER DRIVE

Kurt Haese; Wolfgang Frewe, and Hans-Jurgen Lendt, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 25, 1972, Ser. No. 291,931
Claims priority, application Germany, Sept. 30, 1971, 2149437
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **8 Claims**

1. An electric vacuum switching device having a replaceable and adjustable vacuum switch and a power drive connected to an actuator rod of the vacuum switch, the improvement comprising a lever having a longitudinal axis and being connected at one end to the power drive, said lever having a supporting, pivoting surface positioned between its two ends, the actuator rod of the vacuum switch being connected to the lever at the supporting surface; and, a supporting arrangement for pivotally supporting the lever at its other end so as to define the fulcrum thereof, said arrangement including means

for adjusting the lever so as to displace the fulcrum in a direction transverse to said longitudinal axis by an amount corresponding to the stroke of the vacuum switch whereby the vacuum switch can be adjusted so that said stroke is adapted to the stroke of the power drive.



3,859,487

ELECTRIC SWITCH FOR AERODYNAMIC ACCELERATION OF A PLASMA

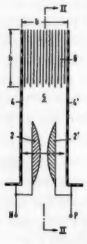
Bertold Berberich, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 151,260, June 9, 1971,. This application Apr. 23, 1973, Ser. No. 353,651

Claims priority, application Germany, June 13, 1970, 2029252

Int. Cl. H01h *33/08*

U.S. Cl. 200—144 R **9 Claims**



1. An electric switch having a quenching chamber including: a chamber wall; switch contacts movable relative to each other and between which a light arc is drawn; insulating members disposed transversely to the direction of movement of said switch contacts; quenching plates, against which said light arc is moved across conductive portions of said chamber wall; and a quenching channel, said quenching channel having a nozzle shaped constriction disposed between said switch contacts and said quenching plates, transversely to the plane of movement of said switch contacts; said constriction having a cross-section rated for aerodynamic acceleration of said light arc, which arc is urged to enter behind the mouth of said nozzle between said quenching plates.

3,859,488

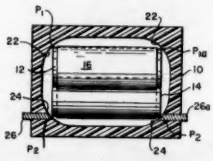
POINT CONTACT ROLLER BAND SWITCH

W. Dale Jones, 7020 Aztec Rd. N.E., Albuquerque, N. Mex. 87110

Filed July 13, 1973, Ser. No. 378,958

Int. Cl. H01h *1/16*

U.S. Cl. 200—153 **5 Claims**



1. In a roller band mechanism having a case, a pair of cylindrical rollers mounted within said case for guided movement along a passage in said case, and a tensioned flexible band anchored at it opposite ends to opposite ends of said passage and trained partially about the circumferences of said rollers in a generally S-shaped configuration to maintain said rollers in a roller cluster; the improvement wherein at least one of said rollers contacts a race surface in said passage only along the periphery of the ends of said one roller so as to establish substantially a point contact at opposite axial ends of said one roller with the race surface during movement of said roller cluster along said passage, said points of contacts **55** along the race surface of said passage occuring only along two separated predetermined line paths, and a plurality of electrical contacts embedded in the race surface of said case having inner ends flush with the surface of said passage at selected locations along said line paths, said one of said rollers being of electrically conductive material and said contacts being electrically insulated from one another.

3,859,489

LEVER MOUNTED SWITCH WITH OUTER ROTATING COVER

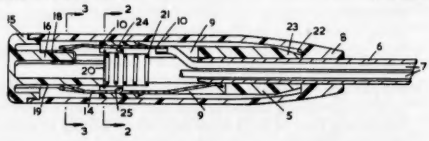
Neil Tomlinson, Burnley, England, assignor to Lucas Electric Company Limited, Birmingham, Great Britain

Filed May 3, 1973, Ser. No. 357,003

Claims priority, application Great Britain, May 6, 1972, 21237/72

Int. Cl. H01h *9/06, 13/08*

U.S. Cl. 200—157 **2 Claims**



1. An actuating lever mounted electrical switch comprising an actuating lever, a body, means mounting said body on said actuating lever at one end thereof, a plurality of non-rotatable resilient contact elements carried by the body, and extending generally parallel to and spaced around an axis coextensive with the longitudinal axis of the actuating lever, a rotatable electric contact, means mounting said rotatable electric contact for rotation about said axis coextensive with said longitudinal axis, said rotatable electric contact being selectively engageable with said non-rotatable contact elements upon rotation of said rotatable contact, and, said means mounting said rotatable contact including a rotatable contact carrier, said rotatable contact carrier being provided with a plurality of depressions therein and said depressions being in releasable engagement with said resilient non-rotatable

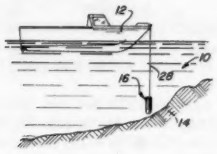
contact elements whereby said rotatable contact can be retained in selected positions relative to said body in engagement with selected fixed contacts, means mounting said carrier for rotation comprising a rotatable casing surrounding said non-rotatable resilient contact elements and said rotatable contacts, and mounted on said lever for rotation relative to said non-rotatable resilient contact elements.

3,859,490

SHOAL DETECTION SYSTEM

Gerald J. Fohey, 3101 S. Norfolk, Aurora, Colo. 80013

Filed Sept. 17, 1973, Ser. No. 397,896
Int. Cl. H01h *29/00*
U.S. Cl. 200—223 **2 Claims**



1. A shoal detection system for suspension from a boat comprising,

a normally vertically oriented switch element having a hollow capsule, a first electrode in the capsule having a contact portion adjacent the bottom of the capsul conforming to the inner peripheral configuration of the capsule, a second electrode in the capsule having a contact portion adjacent the top of the capsule conforming to the inner peripheral configuration of the capsule, a third electrode in the capsul extending along the central vertical axis of the capsule from the top of the capsule to a location between the contact portion of said first and second electrodes, and a quantity of liquid, current-conducting material in the capsule having a depth sufficient to complete electrical contact between said first and third contacts when the capsule is vertically oriented,

cable means suspending the switch element from the boat so that it hangs freely in the water beneath the boat, and an alarm circuit including an electrical power source, an electrically responsive alarm element, a first on-off switch connected in series with the power source, alarm element and the first and second electrodes whereby when the first on-off switch is closed and the capsule is inclined relative to vertical so that the liquid flows into contact with both the first and second electrodes the alarm will be energized, and a second on-off switch connected in series with said power source, alarm element and the first and third electrodes whereby when the second on-off switch is closed and the capsule is vertically oriented, the alarm will be energized.

3,859,491

CONTACT ASSEMBLY AND METHOD OF MANUFACTURE OF HAVING SILVER-CADMIUM OXIDE CONTACTS AFFIXED TO A BRASS CARRIER

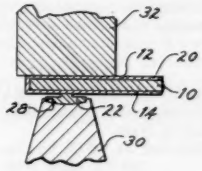
Laurence Eric Larson, Bloomington, Ill., assignor to General Electric Company, New York, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,582
Int. Cl. H01h *1/02*
U.S. Cl. 200—266 **9 Claims**

1. A composite contact assembly fabricated by means of electrical resistance welding, comprising:

a. a support including a brass contact carrier and a copper layer extending over substantially the total surface area of said carrier; and

b. a first silver-cadmium oxide contact member resistance welded directly to said support by opposed welding elec-



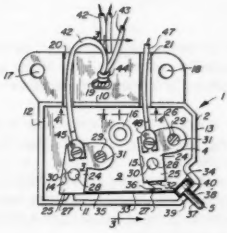
trodes brought into contiguous position with said contact member and said copper layer.

3,859,492

SWITCH WITH HOUSING HAVING LEAD WIRE PROVISIONS

John R. Brandell, 1527 Sequoia Trl., Glenview, Ill. 60025

Filed Jan. 25, 1974, Ser. No. 436,434
Int. Cl. H01h *9/02*
U.S. Cl. 200—293 **10 Claims**



1. A switch comprising

a. a housing comprising

1. a main body portion having an open top, and
2. a flange projecting substantially horizontally outwardly from the upper edge of one sidewall of said body portion,

b. said housing having two elongated, upwardly opening recesses extending transversely across said flange and said sidewall,

c. said flange having an opening extending vertically therethrough.

d. two contact members disposed in said body portion in spaced relation to each other,

e. a cover member mounted on said main body in closing relation to said top,

f. an elongated wire

1. having one end connected to one of said contact members, and
2. extending outwardly of said housing from said one contact member through one of said recesses,

g. two elongated lead wires having

1. proximal end portions and distal end portions, and
2. said proximal end portions extending through said opening,

h. means on said proximal end portions and disposed on the side of said flange remote from said distal end portions for preventing longitudinal movement of said proximal end portions through said opening in a direction toward said distal end portions,

i. the free end of one of said proximal end portions projecting outwardly from said means,

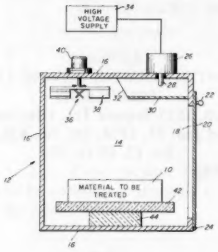
j. the free end portion of the other of said proximal end portions
1. extending through the other of said recesses, and
2. being connected to the other of said contact members and
k. means for electrically connecting said contact members for the passage of electric current therebetween.

3,859,493

MICROWAVE HEATING TEMPERATURE CONTROL

Robert A. Peterson, Canton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 21, 1973, Ser. No. 418,151
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 R **4 Claims**



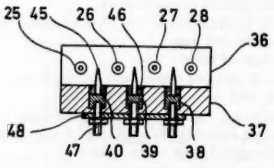
1. A method of controlling microwave heating of material having a substantially exponential rate of rise in dielectric loss characteristic above a critical temperature comprising the steps of;
coating said material with a lossy high energy absorbing liquid having a melting point lower than that of the underlying material; and
heating said coated material with microwave energy for a period of time sufficient to vaporize said coated liquid and heat said underlying material to a temperature below said critical temperature.

3,859,494

DEVICE FOR DRYING WET COATINGS APPLIED TO SUBSTRATES OF LOW ELECTRICAL CONDUCTIVITY

Walter Spengler, Strehlgasse 23, Biel-Benken, Switzerland

Filed Apr. 17, 1974, Ser. No. 461,789
Claims priority, application Switzerland, Apr. 18, 1973, 5596/73
Int. Cl. F26b *3/34*
U.S. Cl. 219—10.61 **7 Claims**



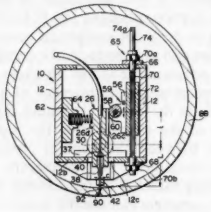
1. A device for drying wet coatings applied to substrates of low electric conductivity, comprising
a. a plurality of first electrodes in the form of elongated rod-like electrical conductors disposed in parallel spaced relationship,
b. an electrically insulating sheath surrounding each first electrode,
c. a plurality of second electrodes in the form of pointed spikes extending substantially perpendicular to the first electrodes and arranged in at least one row with the or each row extending between each adjacent pair of first electrodes, such that the pointed ends of the spikes in each row are virtually equidistant from the adjacent pair of first electrodes and with the pointed end of the spikes situated virtually in the same plane as the pair of first electrodes,
d. HT generating means for maintaining a voltage difference between the first and second electrodes, and
e. retaining means which supports both the first as well as the second electrodes, said retaining means defining means defining a surface electrically insulated from the first electrodes which surface confronts the first electrodes and above which the second electrodes project.

3,859,495

SUBMERGED-ARC WELDING MACHINE

Nobuhiro Takahashi, and Tatsuo Ide, both of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1973, Ser. No. 354,760
Claims priority, application Japan, Jan. 25, 1973, 48-11426
Int. Cl. B23k *9/12, 9/18*
U.S. Cl. 219—125 R **3 Claims**



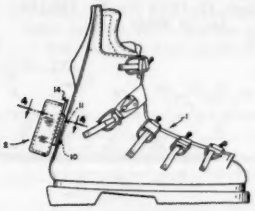
1. A submerged-arc welding machine including:
a frame;
at least one oscillatory welding head pivoted to said frame so as to be rockable across the seam of a workpiece being welded, said welding head being made of electrically conductive material and supplied with a welding wire;
an oscillatory mechanism comprising eccentric cam engaging one side wall of said welding head so as to rock said welding head across said seam of said workpiece, a shaft extending lengthwise of said welding machine and supporting said eccentric cam for rotation, and a vertically movable bearing member rotatably supporting said shaft; and
an oscillatory amplitude adjusting device comprising a threaded shaft vertically penetrating said frame so as to rotate about the axis of said threaded shaft but to be prevented from being moved in the axial direction thereof, and a bearing mount having a cooperatively threaded bore engaged with said threaded shaft and supporting said bearing member being restrained against rotation about said threaded shaft while being free to move axially along the length of said threaded shaft, whereby the position of said bearing member and thereby the axis of rotation of said cam are adjustable relative to the point on said frame about which said welding head pivots to adjust the amplitude of said welding head rocking across said seam of said workpiece.

3,859,496

HEATED INNER SOLE AND BATTERY CASE FOR USE IN BOOT CONSTRUCTION

Erik O. Giese, Key Biscayne, Fla., assignor to Comfort Products, Inc., Aspen, Colo.

Filed Nov. 15, 1973, Ser. No. 416,209
Int. Cl. H05b *1/00*
U.S. Cl. 219—211 4 Claims



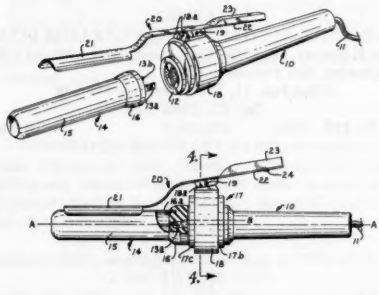
1. An electrically heated inner sole and battery carrying case construction adapted to be applied to a boot, comprising an inner sole having electrical heater elements embedded therein, a movable non-metallic slide adapted to be affixed to the exterior heel portion of a boot, first electrical contacts on said slide, a lead electrically connecting said slide and heating elements, a battery carrying case having a track therein for slidably engaging said slide, second electrical contacts on said case adapted to electrically engage a battery within said case and to engage said first contacts in a first position of said case on said slide and to be disengaged from said contacts in a second position of said case on said slide, and latch means on said slide for locking said case in said first and second positions.

3,859,497

HAIR CURLING INSTRUMENT WITH INTERCHANGEABLE HEATING ELEMENTS

Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Company, Kansas City, Mo.

Filed Jan. 30, 1974, Ser. No. 437,999
Int. Cl. H05b *1/00*; A45d *1/04*
U.S. Cl. 219—225 5 Claims



1. In a handle and clamp structure for a hair curling instrument of the type having a hair heating element projecting from one end of the handle and a clamp pivotally fulcrumed on the handle, said clamp having a clamping portion adapted to clamp hair to the heating element along the major portion thereof, the improvement comprising

means providing a detachable connection between the heating element and handle whereby heating elements of different transverse dimensions can be substituted for one another to provide a tighter or more open curl, said connection being such that there is a reference axis fixed in relation to said handle and common to the various heating elements,

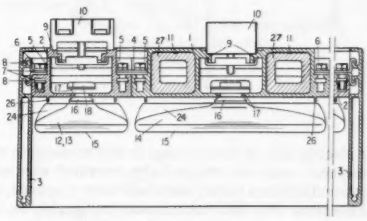
means supporting said clamp from said handle and rotatable relative to the handle about a second axis parallel to and spaced from said reference axis whereby when said support means is rotated relative to the handle, the radial distance from said reference axis to said pivot is varied in response to said rotation thereby to accommodate said clamping portion of the clamp to different size heating elements.

3,859,498

INFRARED RADIATION SYSTEM

Manfried Steinmetz, Seldeweg 3, Northeim, Germany

Filed Feb. 22, 1973, Ser. No. 334,773
Claims priority, application Germany, Feb. 23, 1972, 2208541; Feb. 23, 1972, 7206777
Int. Cl. H05b *3/20*
U.S. Cl. 219—352 8 Claims



1. An infrared radiating system comprising a modular rack; reflecting sidewalls removably engaged with said modular rack to form an enclosure; and a plurality of hollow, modular, ceramic heating and radiating elements supported by said modular rack within said enclosure; each of said heating and radiating elements having a polygonal contour, having a plane radiating front side on which an electrically-powered resistance element is mounted, and having a spaced backside with a mounting element thereon removably engaged by said modular rack to suspend the associated heating and radiating element from said modular rack and position the plane radiating front side of that heating and radiating element with the plane radiating front sides of the other heating and radiating elements in a common uninterrupted radiating plane below said modular rack and within said enclosure.

3,859,499

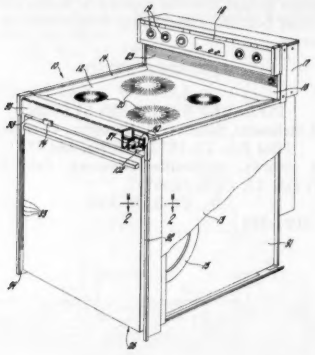
AIRFLOW COOLING SYSTEM FOR HEAT-CLEANING RANGES

Jesse L. Evans, Tipp City, and Eugene L. Hecker, Dayton, both of Ohio, assignors to General Motor Corporation, Detroit, Mich.

Filed June 12, 1974, Ser. No. 478,688
Int. Cl. F27d *11/02*
U.S. Cl. 219—396 5 Claims

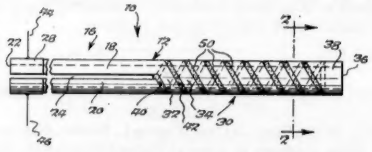
1. A cooking range adapted for installation in a space provided therefor in a counter having a horizontal working surface, comprising an outer casing for said range adapted to be secured in said space, air sealed cooktop means forming the top cooking surface of the casing, an electrical heating element and support means for said heating element, said support means received below said cooktop means, a heat-cleaning oven cabinet supported in spaced relation in said casing beneath said cooktop, said oven including a liner having walls defining an oven cavity open at the front, an air flow passagedisposed generally between said heating element support

means and said oven cabinet upper wall, said casing including top and side door frame members at the front of the oven cabinet, a door for closing said oven compartment, a splash panel extending across the rear of said cooktop having exhaust vent means therein, a vertically disposed plenum duct having a lower intake opening in communication with the rearward end of said air flow passage, said duct having an upper outlet opening in communication with said exhaust vent means, power driven exhaust fan means disposed within said duct lower intake opening, air inlet means in said door top frame



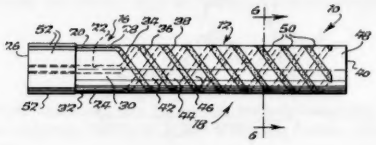
member placing said air flow passage in communication with the atmosphere, said inlet means being provided with valve means resiliently biased closed when said door is opened, and means associated with said valve means engageable by said door upon shutting same to maintain said inlet means open, whereby upon ititiation of the oven heat-cleaning operation the fan means is energized to draw cooling ambient air through said inlet means into said flow passage for exhausting the air to the atmosphere through said duct and said splash panel exhaust vent means.

3,859,500
HEATING ELEMENT
Stanley J. Matys, Depew, N.Y., assignor to I Squared R Element Company, Inc., Lancaster, N.Y.
Filed Sept. 17, 1973, Ser. No. 398,185
Int. Cl. H05b *3/10*
U.S. Cl. 219—553 **7 Claims**



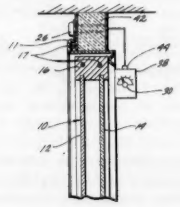
1. A heating element comprising: an elongated hollow body formed of a dense, self-bonded silicon carbide material; said body having terminal sections and a hot zone section therebetween; each of said terminal sections being provided with electrical conducting material to provide electrical terminals for said body; said hot zone section being formed of at least one spiral extending generally longitudinally of said body; said hot zone section having at least one continuous slot separating adjacent convolutions of said spiral from each other; and a zircon base ceramic insulating filler material permanently disposed in said slot between said spiral convolutions preventing accumulation of contaminants and for strengthening said element; said filler material having a coefficient of expansion substantially similar to the coefficient of expansion of said silicon carbide material, said filler material remaining in said slot and being capable of withstanding temperatures over the entire operating temperature range of said heating element from room temperature up to about 3,100°F.

3,859,501
THREE-PHASE HEATING ELEMENT
Stanley J. Matys, Depew, N.Y., assignor to I Squared R Element Company, Inc., Lancaster, N.Y.
Filed Sept. 17, 1973, Ser. No. 398,186
Int. Cl. H05b *3/10*
U.S. Cl. 219—553 **6 Claims**



1. A heating element comprising: an elongated hollow body formed of a dense, non-metallic, electrical resistance material; said body having a cold zone section and a hot zone section; said cold zone section comprising three laterally spaced elongated members extending longitudinally inwardly from one end of said body; each of said elongated members being provided with electrical conducting material to provide electrical terminals for said hollow body; said hot zone section comprising three spaced, parallel spirals connected to the inner ends of said elongated members, respectively, and extending therefrom in a helical path longitudinally along substantially the remainder of said body; said spirals terminating in a common end juncture; each of said spirals having a lesser cross sectional area than the elongated member to which it is joined; said spirals being spaced from each other by spirals slots formed in said body; and a zircon base ceramic insulating filler material permanently disposed in said slots between said spirals preventing accumulation of contaminants and for strengthening said element, said filler material having a coefficient of expansion substantially similar to the coefficient of expansion of said electrical resistance material, said filler material remaining in said slots and being capable of withstanding temperatures over the entire operating temperature range of said heating element from room temperature up to about 3,100°F.

3,859,502
DEFROSTING SYSTEM FOR REFRIGERATOR DOORS
James J. Heaney, Glendale, Calif., assignor to Anthony's Manufacturing, San Fernando, Calif.
Filed Feb. 11, 1974, Ser. No. 440,988
Int. Cl. H05b *1/00*
U.S. Cl. 219—218 **10 Claims**



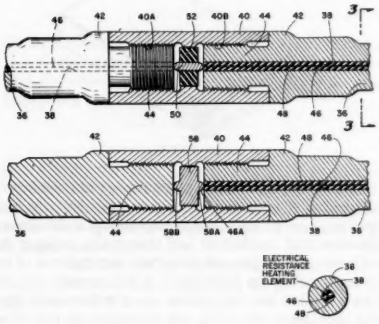
1. Defrosting apparatus for display type refrigerator and freezer equipment having a door with a glass viewing area, comprising: electrical heating means associated with the door

for heating portions of the door, a relative humidity-sensing element mounted outside the door for sensing ambient relative humidity, and control means responsive to the humidity-sensing means for connecting the heating means to an electrical power source only when the relative humidity exceeds a predetermined level.

3,859,503
ELECTRIC HEATED SUCKER ROD

Richard D. Palone, 1332 S. Erie, Tulsa, Okla. 74112

Filed June 12, 1973, Ser. No. 369,167
Int. Cl. H05b *3/02*; **E21b** *43/24*
U.S. Cl. 219—278 **4 Claims**



1. In an oil well including a vertical string of sucker rods extending from the earth's surface downward to a subterranean pump including means at the surface for reciprocation of the sucker rods for actuation of the pump, a means for maintaining the temperature of the crude oil being pumped to the surface above a preselected level to prevent the congealation of paraffin, comprising:

a vertical sucker rod string formed of lengths of sucker rods, each sucker rod having means for the attachment at each end thereof to adjacent sucker rods, each sucker rod having an axial small diameter bore hole therein;

an electrical heating element positioned in said bore hole; solid heat conducting electrical insulation completely filling said bore hole in said sucker rod surrounding said heating element, and

means of applying a voltage to cause current to flow through said heating element.

3,859,504
MOISTURE RESISTANT PANEL HEATER

Yutaka Motokawa, and Masaharu Fukushima, both of Kakogawa, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo and Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Apr. 6, 1973, Ser. No. 348,786
Claims priority, application Japan, Apr. 6, 1972, 47-34698
Int. Cl. H05b *3/28*
U.S. Cl. 219—345 **3 Claims**

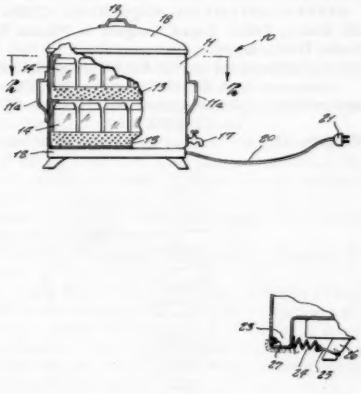
1. A moisture resistant panel heater comprising a heating element consisting of a carbon fiber-containing paper sheet and electrodes on two opposite ends thereof, a layer of polyethylene laminated to both surfaces of said heating element, a layer of aluminum foil laminated to both outer surfaces of the polyethylene layers, sheets of a synthetic resin laminated to both outer surfaces of said aluminum foils, and further comprising extended portions of said electrodes soldered to a core of an insulated conductor having a polyethylene insulating layer and an outer sheath, said polyethylene insulating layer of said conductor melt-bonded to said polyethylene

layers, and a felt impregnated with an epoxy resin which is cured, said felt holding an edge of the outer synthetic resin layers of said heater and the outer sheath of said conductor.

3,859,505
ELECTRICALLY HEATED BOILER WITH PERFORATED RACK AND AN ADJUSTABLE HEAT SHIELD

Lois A. Herbrand, Rt. 2, Box 2347, Spanaway, Wash. 98387, and George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Oct. 12, 1973, Ser. No. 406,009
Int. Cl. F27d *11/02*
U.S. Cl. 219—433 **1 Claim**



1. A portable boiler containing water in combination with a pair of similar racks and a portable electric heater, each rack adapted to hold a plurality of jars, said boiler having an encompassing side wall integral with a heat conductive bottom wall and including a removable top enclosure, each of said racks comprising a perforated bottom wall and a perforated peripheral wall which fits snugly within the boiler side wall, each rack having a pair of raised handles extending upwardly from opposite ends of each rack having portions extending inwardly providing a pair of supports whereby one rack may be stacked above the other rack above the bottom wall providing thereby a two tiered construction,

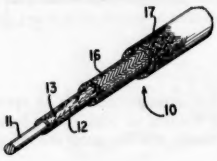
said electric heater supporting the boiler under the bottom wall of the boiler, said side wall of the boiler extending downwardly below the heater whereby the heater is encompassed by an annular jacket to more efficiently transfer heat from the heater to the boiler,

and an adjustable heat shield attached to the jacket for further enclosing the heater.

3,859,506
CONSTANT WATTAGE HEATING ELEMENT

Raymond A. Weckstein, Tulsa, Okla., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed June 15, 1973, Ser. No. 370,414
Int. Cl. H05b *3/10*
U.S. Cl. 219—552 **3 Claims**

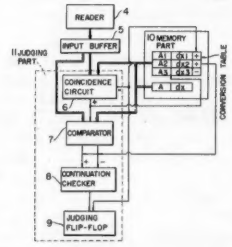


1. An electrical resistance heating cable comprising an electrical conductor rod, a coaxial tubular electrical insulating braid enclosing said conductor, a tubular electrically conductive braid enclosing said coaxial tubular insulating braid, and strands of electrically conductive yarn of high electrical resistance in said coaxial tubular braid exposed at spaced points on the inner and outer surfaces of said coaxial tubular braid defining a plurality of high resistance paths between said conductor rod and coaxial tubular braid whereby the heating element has a constant wattage per unit length.

3,859,507
AUTOMATIC TICKET PREPARING AND EXAMINING SYSTEM EMPLOYING SEQUENTIAL CODE

Hideaki Konya, Tokyo, Japan, assignor to Nippon Kokuyu Tetsudo, Tokyo, Japan

Continuation-in-part of Ser. No. 825,858, May 19, 1969. This application Sept. 18, 1972, Ser. No. 290,150
Claims priority, application Japan, May 24, 1968, 43.34712
Int. Cl. G06k *5/00*
U.S. Cl. 235—61.7 R **5 Claims**



1. A ticket examination and validation device for examining and validating tickets for a transportation network comprising:

a. a reader for reading station codes representative of route information on a ticket for a transportation network;

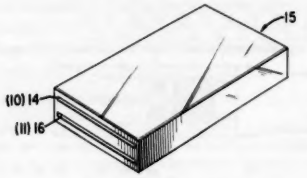
b. a memory for storing therein the station-codes of the station of the transportation network at which the ticket is being examined, and a senior junction station thereof; and

c. a judging part comprising coincidence and comparator circuits to test for coincidence between the station-codes read by said reader and the station-codes stored in said memory, a continuation checker to determine if two stations represented by two consecutive station codes appearing on the ticket are located on opposite sides of the station of the transportation network at which the ticket is being examined, and a flip-flop switched on when the station-codes on the ticket are representative of a route passing through or ending at the station at which the ticket is being examined.

3,859,508
METHOD OF CONTROL OF LEGITIMACY SAFE AGAINST FORGERY

Jorgen Brosow, Hof, and Erik Furugard, Anieres, Switzerland, assignors to Dasy Inter S.A., Geneva, Switzerland

Filed May 30, 1973, Ser. No. 365,073
Claims priority, application Sweden, Jan. 24, 1973, 948/73; Apr. 4, 1973, 4728/73
Int. Cl. G07f *7/02*; **G06k** *5/02, 7/08, 19/06*
U.S. Cl. 235—61.7 B **13 Claims**



1. A method for the control of legitimacy safe against forgery comprising at least two documents provided with bits of information, one of said documents being a document of identification and another of said documents being a document releasing a function, wherein the character bits of information required for the function of said document releasing a function is divided into two partial bits of information supplementing each other, providing one of said partial bits of information in said document of identification and providing the other of said partial bits of information on said document releasing a function, wherein at least one of said partial bits of information on one of said documents is determined by a mathematical function of the other partial bits of information on one of said documents, said mathematical function being provided on one of said documents, transferring said partial bits of information on said document of identification to said document releasing a function, whereby the document releasing a function contains the complete bits of information required for releasing the function, presenting said document releasing a function to a verifying terminal position, verifying the complete bits of information required for releasing the function of the document releasing a function, being a combination of said two partial bits of information by means of said mathematical function ad releasing the function when said complete bits of information are verified.

3,859,509
EMBOSSED CARD READING AND IMPRINTING APPARATUS

Edward Dillingham, Pacific Palisades, and John H. Humphrey, Los Angeles, both of Calif., assignors to Data Source Corporation, El Segundo, Calif.

Filed Apr. 23, 1973, Ser. No. 353,931
Int. Cl. G06k *1/22, 7/04*; **B41f** *3/04*
U.S. Cl. 235—61.9 R **18 Claims**

1. Apparatus for reading cards having embossed data thereon and imprinting a document comprising:

base means for receiving and holding a card;

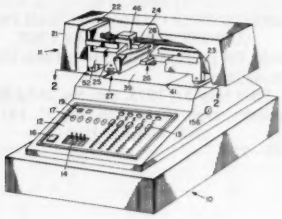
means for serially reading the embossed data on said card and for generating electrical signals corresponding to said embossed data;

means for selecting variable data which can be imprinted on a document and for generating electrical signals corresponding to said variable data;

means for transmitting said electrical signals corresponding to said embossed data and at least some of said variable data to a remote location;

means for receiving a document with at least a portion thereof overlapping said card;

means for imprinting the embossed data and selected variable data onto the document; and



logic means responsive to both a predetermined authorization signal being received from said remote location and said document being in imprinting position for enabling imprinting of said document.

3,859,510

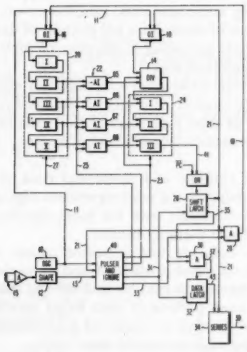
DATA SEPARATION CIRCUITRY FOR READING INFORMATION FROM A MOVING SUPPORT

Donald E. Fiehmann, San Jose, and Kim C. Reynolds, San Martin, both of Calif., assignors to International Business Machines, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,582

Int. Cl. G06k *7/08, 7/10;* **G11b** *5/09*

U.S. Cl. 235—61.11 D **6 Claims**



1. Apparatus for recovering data from a double frequency encoded signal train, comprising:

first unidirectional counter means for generating a first count representing the time between adjacent timing signals in said signal train,

second unidirectional counter means responsive to said count for generating an output signal upon counting said first count,

means for incrementing said first counter at a first rate and said second counter at a second rate, with said second rate being faster than said first rate,

transfer means responsive to the occurrence of said timing signals for transferring the contents of said first counter to said second counter,

means responsive to said output signal for signalling the presence or absence of a data signal following the second of said timing signals.

3,859,511

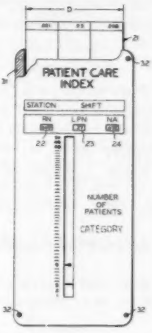
PLANNING TOOL FOR DEVELOPING THE STAFFING REQUIREMENTS OF A SERVICE WORK FORCE

Maurice J. Walker, Lincolnshire, Ill., assignor to M. Walker Associates, Inc., Northbrook, Ill.

Filed Sept. 6, 1973, Ser. No. 394,756

Int. Cl. G06c *3/00*

U.S. Cl. 235—85 R **5 Claims**



1. A tool for developing and staffing a service work force with the required amount of personnel comprising:

a frame having at least two surfaces;

a series of information display windows, laterally aligned in said frame;

index window means longitudinally disposed in said frame and having a selector scale adjacent thereto calibrated into a graduated series of indicia representing the total number of task units serviced by said work force;

a plurality of separate slide means equal to the number of said display windows;

said slide means adapted to be slidably disposed in said frame;

each of said slide means comprising a plurality of series of indicia representing scales in terms of fractions of man hours required for a given class of worker to serve in a total number of task units serviced by said work force, the relative lengths of each series of indicia being correlated relative to each other;

each of said slide means additionally comprising an identifying proportion factor representing the basic time module of work which a worker must devote to each category of work, whereby the position of each slide in said frame is determined from time studies directed at ascertaining the basic unit of time required to perform a pre-selected task; said slides having a physical relationship to said index window means whereby any one of said plurality of series of indicia may be displayed in said window means responsive to interchanging, reversing, and inverting the positions of said slides in accordance with said proper identifying proportion factor;

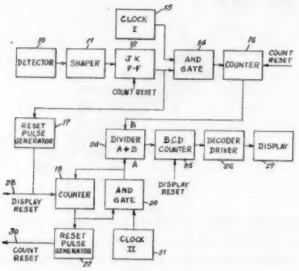
selector means on each of said slides for positioning each said slide relative to said frame by selecting the total number of task units on said selector scale regardless of the interchanged, reversed, or inverted position of said slide;

whereby alignment of said slides relative to each other indicates in said display windows the total number of man hours required for each of the different categories of work required.

3,859,512
RATE METER

Karl R. Ritzinger, 211 Sherwood Dr., Manchester, N.H. 03103

Filed Apr. 26, 1973, Ser. No. 354,642
Int. Cl. G06m 3/06; G01n 23/10
U.S. Cl. 235—151.3 7 Claims



1. A method of metering the rate of recurring events comprising:

a. gating clock signals into a period counter during an event period defined by two consecutive events to obtain a divisor;

b. dividing a predetermined fixed dividend by said divisor to obtain a quotient;

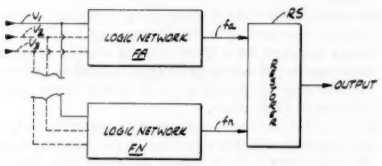
c. applying said quotient to drive a display; and,

d. repeating the above steps for at least every other event period, the relation of the frequency of said clock signals to the count of said fixed dividend being determined to provide a display rate in conventional time units.

3,859,513
SWITCHING AND DIGITAL SYSTEM

Henry Ying Huang Chuang, Creve Coeur, and Santanu Das, University City, both of Mo., assignors to The Washington University, St. Louis, Mo.

Filed Feb. 28, 1973, Ser. No. 336,520
Int. Cl. G06f 11/00
U.S. Cl. 235—153 AE 19 Claims

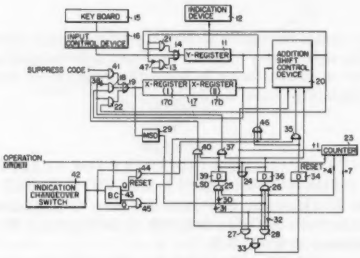


1. An increased reliability switching or digital system comprising at least two identical logic networks each of which has an output providing three distinctly different types of output signals, said types of output signals being correct, safe and incorrect, whereby there are two possible levels of failure one being a safe level and the other being an incorrect level; and restorer means having inputs connected to the logic network outputs and having a single output providing three distinctly different types of output signals, the first of which is correct, the second of which is safe, and the third being incorrect, said restorer means providing a correct output signal for so long as more of the logic networks have correct output signals than have incorrect output signals no matter how many networks might have a safe output signal, said restorer means further providing a safe output signal if as many logic networks have a correct output signal as have an incorrect output signal, said restorer means providing an incorrect output signal only if more logic networks have incorrect output signals than have correct output signals.

3,859,514
ARITHMETIC OPERATION AND TRAILING ZERO SUPPRESSION DISPLAY UNIT

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed May 31, 1973, Ser. No. 365,620
Claims priority, application Japan, May 31, 1972, 47-53943
Int. Cl. G06f 3/14
U.S. Cl. 235—156 2 Claims



1. An electrically actuated indication apparatus for storing and displaying numerical data, said numerical data including a head portion of data and a tail portion of data, comprising:

indicator means including a plurality of digit indicators for displaying numerical data;

memory means coupled to said indicator means and having a greater number of digits of storage capacity than the number of digit indicators of said indicator means, said memory means being adapted to store said numerical data;

means for shifting said numerical data in said memory means such that the most significant digit of said numerical data coincides with the most significant one of the digits of said memory means;

means for ordering said indicator means to indicate the digits in the head portion of said numerical data shifted in said memory means by said shifting means, said digits in said head portion of data being identical in number with the number of digits of said indicator means for displaying said numerical data;

means for generating an order signal which orders said indicator means to display the numerical data in the tail portion of said shifted numerical data instead of the head portion;

means responsive to said order signal for ordering said indicator means to display the digits in the tail portion of data successively first at the most significant digit position and at the succeeding ones so that the most significant one of the digits in the tail portion of data may be indicated following the least significant one of the digits in the head portion of data, the display of which was switched off by said order signal;

discriminating means for distinguishing the least significant one of the digits in the tail portion of said numerical data from the digits following said least significant digit; and

suppressing means controlled by said discriminating means and adapted to suppress those digit positions of said indicator means which correspond to the digits following said least significant digit of the tail portion of data.

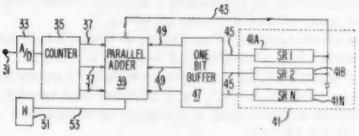
3,859,515
METHOD AND APPARATUS FOR SIGNAL SPECTRUM ANALYSIS BY HADAMARD TRANSFORM

Arthur J. Radcliffe, Jr., Ann Arbor, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 282,418, Aug. 21, 1972, abandoned. This application Oct. 2, 1973, Ser. No. 402,723

Int. Cl. G06k *9/00*

U.S. Cl. 235—164 **22 Claims**



1. Apparatus for providing a Hadamard characterization of an analog signal comprising:

means for providing a digital representation of an analog signal;

means for sequentially generating the elements of the Hadamard matrix;

storage means; and

adder means coupled to said means for providing a digital representation, to said Hadamard matrix generator and to said storage means, said adder means responsive to the value supplied by said Hadamard matrix generator for adding the digital representation of said analog signal to the value stored in said storage means when said Hadamard matrix element is positive and for subtracting the digital representation from the value stored in said storage means when said Hadamard matrix element is negative.

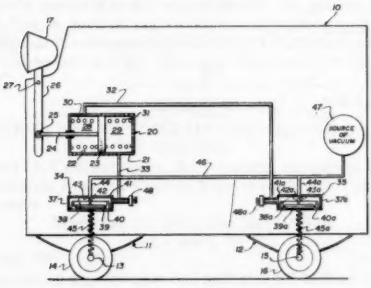
3,859,516
VEHICLE HEADLIGHT ADJUSTING SYSTEM

John J. Tuzson, Evanston, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 5, 1973, Ser. No. 321,487

Int. Cl. B60g *1/10*

U.S. Cl. 240—7.1 LJ **4 Claims**



1. A system for automatically adjusting the inclination of the headlights of an automotive vehicle having a body resiliently suspended for deflection relative to front and rear wheel assemblies thereof, comprising:

a fluid circuit including a pneumatic source providing a pressure differential with respect to ambient atmosphere, and a pair of branch circuits each including a bleed orifice communicating continuously with ambient atmosphere and a poppet valve controlling flow between said source and a respective branch circuit,

a pair of control devices connected to said front and rear wheel assemblies respectively for sensing the relative deflection of said body with respect thereto, each of said control devices being connected to one of said poppet valves biasing said valve proportional to the deflection of its associated wheel assembly providing a regulated pressure in its associated branch circuit proportional to the deflection of its associated wheel assembly,

each of said branch circuits being connected to one of a pair of opposed variable volume working chambers forming a double acting fluid motor, said fluid motor being connected to adjusting means for tilting said headlights about a horizontal axis and operable to correct the inclination of said headlights proportional to the difference in deflection of said front and rear wheel assemblies.

3,859,517
MARKED LINE FOLLOWING DEVICE PROVIDED WITH MEANS FOR DETECTING BOTH THE CENTER AND THE PRESENCE OF THE LINE

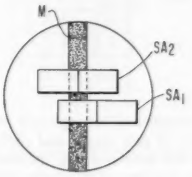
Toshiyuki Okuma, Tokyo, Japan, assignor to Fiji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 26, 1973, Ser. No. 344,663

Claims priority, application Japan, Mar. 27, 1972, 47-30496

Int. Cl. G06k *11/02*

U.S. Cl. 250—202 **10 Claims**



1. A device for following a line marked on a flat surface comprising:

a first detecting means comprising a first pair of adjacent photoelectric elements for detecting the presence of the marked line thereunder,

a second detecting means comprising a second pair of adjacent photoelectric elements for detecting the center of the marked line,

an optical system provided in the device for projecting an optical image of the marked line on both said detecting means and associated with said first detecting means so that the optical axis thereof is moved to find the marked line when said first detecting means does not find the marked line,

a driving means for moving the device according to the output signal of said second detecting means so that the device will be moved in such a direction that the second detecting means constantly detects the center of the marked line.

3,859,518
CCD LIGHT CHANGE MONITOR FOR SENSING MOVEMENT ETC.

Wendell B. Sander, Cupertino, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Jan. 7, 1974, Ser. No. 431,262

Int. Cl. G06m *7/00*

U.S. Cl. 250—209 **8 Claims**

1. Apparatus for sensing changes in ambient light conditions comprising:

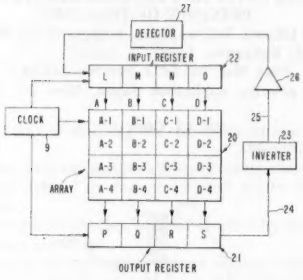
a charge-coupled device for image sensing having an array of cells having at least one row or column, each of said cells having a light-sensitive portion which provides an output signal in the form of an electrical charge, the

magnitude of which is dependent upon the amount of light incident upon said first portion, and a storage portion which stores the charge from said first portion, said array having serial input and output means;

means for exposing each of said light-sensitive portions of each of said cells to incident light;

an inverter means series-coupled between said output means and said input means of said array, said inverter means inverting the charge stored in the storage portion of each cell to a charge of opposite polarity and of substantially the same magnitude when such charge passes through said inverter;

a timing means coupled to said array for first initiating the shift of charge stored in said storage portions of each of said cells during a first time interval along each of said



rows or columns and through said inverter means to the input means of said array, said shifting continuing until the charge has been inverted and returned to the respective storage portions of all of said cells, and second, initiating the transfer of the electrical charge resulting from the exposure of said light-sensitive portions of said cells during a second time interval from said light-sensitive portions to said storage portions of each of said cells, whereby the charge then stored in said storage portions of each of said cells will be cancelled to the extent that the magnitude of the incident light on said cells during said two time intervals remains the same; and

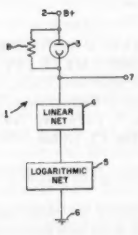
means for detecting the resulting summation of the charges in the storage portions of the cells of said array after the completion of both time intervals.

3,859,519

WIDE DYNAMIC RANGE OMNIDIRECTIONAL OPTICAL SENSOR FOR DETECTING NUCLEAR DETONATIONS

Richard C. Weischedel, Camillus, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Apr. 3, 1973, Ser. No. 347,611
Int. Cl. G01j *1/16*; G01t *1/16*
U.S. Cl. 250—206 **1 Claim**



1. An optical sensor for detecting and signaling the occurrence of a deviation from an ambient light condition comprising:

a. an electrical photosensitive device;

b. electrical terminal and ground means for applying a potential across said photosensitive device;

c. a variable load resistance means in series with said photosensitive device for producing an output signal in terms of the potential across said resistance means which is relatively linear for high current flows and relatively logarithmic for low current flows whereby said device and said resistance means constitutes a detector circuit, said variable load resistance means including:

1. a linear network of resistance R across which the potential V is according to $V = IR$, in series with

2. a logarithmic network across which the potential V is according to $V = (f) \log I$, whereby said variable load means output signal is a voltage according to $V = (f) \log I + IR$; and

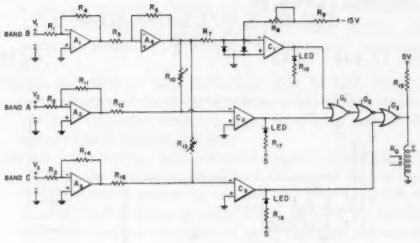
d. a resistance in parallel with said photosensitive device for providing a threshold level of current in said detector circuit.

3,859,520

OPTICAL DETECTION SYSTEM

Martin Hertzberg, Pittsburgh; Charles D. Litton, McMurray; John N. Murphy, and H. Kenneth Sacks, both of Pittsburgh, all of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 17, 1974, Ser. No. 434,162
Int. Cl. G01j *3/34*, *3/50*
U.S. Cl. 250—209 **8 Claims**



1. A method for detecting and suppressing a gas-air explosion comprising the steps of:

first, predetermining the specific characteristic signature for the explosion spectrum of the gas-air mixture under observation and noting its spectral peak bank and adjacent side bands;

second, detecting the spectral irradiance incident on a plurality of optical detectors operating in the same radiant energy spectrum as said predetermined characteristic signature; and comparing the detected irradiance with said characteristic explosion signature; and

actuating an explosion suppression device to suppress said gas-air explosion when said comparing step indicates the detected irradiance and the predetermined characteristic signature fulfill basic predetermined matching conditions.

3,859,521

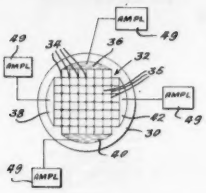
GRID LATERAL PHOTODETECTOR

William P. Connors, Florissant; Robert G. Wagner, University City, and Jon C. Richmond, Cincinnati, all of Ohio, assignors to McDonnell Douglas Corporation,, St. Louis, Mo.

Continuation-in-part of Ser. No. 326,114, Jan. 23, 1973, abandoned. This application Apr. 26, 1974, Ser. No. 464,690

Int. Cl. H01j 39/12

U.S. Cl. 250—211 J 17 Claims



1. A radiation detector responsive to light radiations emitting from an object in a field of view comprising a semiconductor element having first and second opposite surfaces, said first surface being oriented to receive radiations from the field of view, means forming a radiation sensitive region adjacent to said first surface including means forming a Schottky barrier, an associated depletion region on said semi-conductor element, a source of relatively static bias voltage and means connecting said source to the Schottky barrier forming means to bias said barrier electrode to a condition establishing a region of high electric field adjacent thereto in the semiconductor element, means forming a grid on the said second surface of said semi-conductor element, said grid including a plurality of spaced ohmic contacts and means forming resistive electrical connections between adjacent ones of said ohmic contacts, a pair of spaced and opposed collector electrodes positioned on said second surface adjacent opposite sides of said grid, means connecting the collector electrodes to the resistive grid connections adjacent to the respective opposite sides of said grid, light impinging on the region formed by the Schottky barrier causing hole electron pairs to be released some of which migrate to the grid and generate currents in the resistive connections thereof, some of said current generated in the grid flowing to the collector electrodes to generate output signals thereat, the amount of current flow to each of said collector electrodes varying as a function of the distance between where radiations impinge on the first surface and the respective collector electrodes.

3,859,522

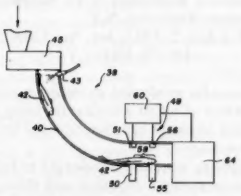
METHOD FOR NON-DESTRUCTIVE TESTING OF FISH FOR SEX

Robert M. Cuthbert, Delta, B.C., Canada, assignor to British Columbia Research Council, Vancouver, British Columbia, Canada

Filed May 15, 1973, Ser. No. 360,526

Int. Cl. H01j 39/12

U.S. Cl. 250—223 R 3 Claims



1. A rapid non-destructive method of testing whole fish for sex, which comprises directing radiant energy in to the gonads region of a whole fish, and detecting resultant energy emanating from said region, the magnitude of the detected energy relative to that applied providing an indication of the sex of the fish, roe in a female fish causing a higher energy emanation than milt in a male fish.

3,859,523

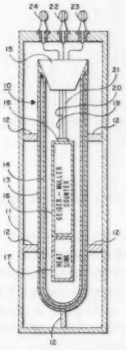
HIGH TEMPERATURE WELL LOGGING INSTRUMENT HAVING INCREASED UTILIZATION OF DEWAR FLASKS

Billy F. Wilson, and William H. Spidell, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 26, 1973, Ser. No. 326,649

Int. Cl. G01v 5/00

U.S. Cl. 250—261 6 Claims



1. A well logging apparatus for logging very hot wells, comprising:

an elongated housing adapted to traverse said wells;

a first double-walled enclosure in said housing defining a first sealed-off space interior to the walls of said first enclosure, said first space being at least partially evacuated;

a first mass of material in said first space having a given heat sink capability;

a first well logging element in said first space for producing signals representative of a physical condition in said well;

a second double-walled enclosure in said housing defining a second sealed-off space interior to the walls of said second enclosure, said second space being at least partially evacuated;

a second mass of material in said second space having a given heat sink capability; and

electronic circuitry in said second space electrically connected to said first well logging element for conditioning said signals for transmission to the earth's surface.

3,859,524

METHOD AND APPARATUS FOR AUTOMATIC CORRECTION OF MEASURED THERMAL NEUTRON DECAY TIME

William B. Nelligan, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

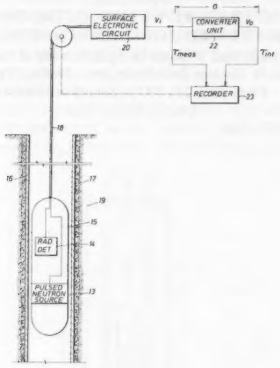
Continuation of Ser. No. 861,103, Sept. 25, 1969, abandoned. This application May 26, 1972, Ser. No. 257,462

Int. Cl. G01t 1/16

U.S. Cl. 250—262 10 Claims

1. A system for correcting a measured neutron property of an earth formation traversed by a borehole comprising, means for irradiating the earth formation with a neutron pulse, detector means for producing a signal that reflects a neutron property of the formation and the borehole that is measured after a delay after the termination of said neutron pulse, in which said delay is related to a function of the measured neutron

property, means for producing a representation of a borehole parameter which has adverse effects on the relationship of said detector signal to said formation neutron property, converter means responsive to said detector signal and said borehole parameter representation for compensating said detector



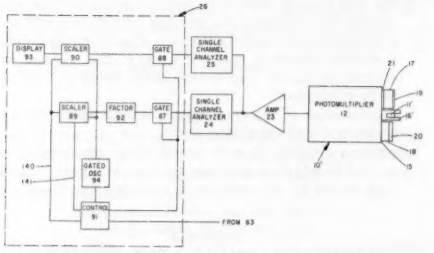
signal for the borehole parameter in accordance with a predetermined functional relationship between said borehole parameter and said measured neutron property to produce a resultant signal that indicates a corrected measure of said formation neutron property, and means for recording said corrected measure signal.

3,859,525

METHOD AND APPARATUS FOR FLUORESCENT X-RAY ANALYSIS

John B. Ashe; Peter F. Berry, and James D. Hall, all of Austin, Tex., assignors to Texas Nuclear Corporation, Austin, Tex.

Filed June 4, 1973, Ser. No. 366,488
Int. Cl. G01n *23/22*
U.S. Cl. 250—273 **7 Claims**



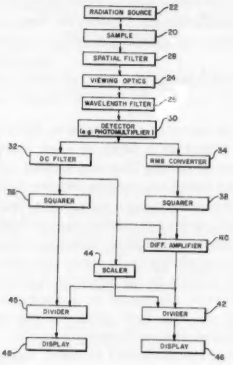
1. In a balanced fluorescent radiation detection apparatus utilizing a primary radiation source, a single photodetector having a photosensitive face, separate scintillator means in optical communication with said photosensitive face and shielded from said primary radiation source and optically shielded from each other, first and second radiation filter means wherein said first filter means, in contrast to said second filter means, selectively attenuates fluorescent radiation in a narrow energy band corresponding to the fluorescent radiation energy of an element of interest, the improvement wherein said first and second filter means are concurrently positioned for fluorescent radiation detection in association with separate ones of the scintillator means, and a light filter for uniformly attenuating light energy by at least 10 percent is interposed between the scintillator means associated with said first filter means and the photosensitive face of said photodetector.

3,859,526

METHOD AND APPARATUS FOR DETECTING

Tomas Hirschfeld, Framingham, Mass., assignor to Block Engineering, Inc., Cambridge, Mass.

Filed Oct. 23, 1973, Ser. No. 408,602
Int. Cl. G01t *1/00*
U.S. Cl. 250—302 **14 Claims**



1. Apparatus for determining characteristics of a sample of radiantly emissive submicron-sized particles suspended in a fluid medium; and comprising in combination;

means for detecting radiant emission from said particles,

means for converting said radiant emission into an electrical signal,

means for determining the value of the amplitude of any substantially steady-state component of said signal,

means for determining the root mean square value of the amplitude of any oscillatory components of said signal, and

means for determining, as a function of the values of both said steady state and oscillatory components, either or both of the values of the average mass per unit particle and the statistical distribution of said particles in said sample.

3,859,527

APPARATUS AND METHOD FOR PRODUCING IMAGES CORRESPONDING TO PATTERNS OF HIGH ENERGY RADIATION

George W. Luckey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

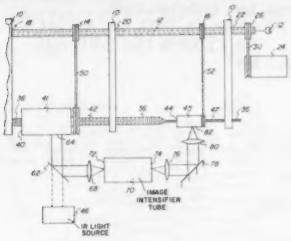
Filed Jan. 2, 1973, Ser. No. 320,028
Int. Cl. G01t *1/11*
U.S. Cl. 250—327 **14 Claims**

1. An apparatus for producing an image corresponding to a pattern of radiation of a first wavelength, using a medium for releasably storing an image representative of the pattern, said apparatus comprising:

means for applying a second wavelength of radiation to said image storage medium to cause said storage medium to emit a third wavelength of radiation having an intensity pattern representative of the stored image;

means for sensing the third wavelength radiation and for

producing electrical energy in accordance therewith; and means for converting the electrical energy into an image



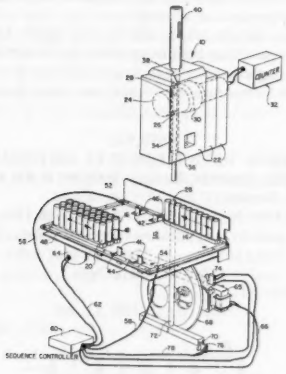
corresponding to the pattern of first wavelength radiation.

3,859,528

GAMMA RAY APPARATUS WITH SAMPLE CHANGER

Samuel H. Luitwieler, Jr., La Habra; Paul R. Klein, Laguna Niguel, and Dale Dario Robinson, Placentia, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 26, 1973, Ser. No. 344,717
Int. Cl. G01t 7/08
U.S. Cl. 250—328 **11 Claims**



1. In radiation source measuring apparatus, the combination comprising:

a detector assembly having a vertically aligned sample chamber and an elongate access port communicating therewith and depending therefrom;

sample changer means for incrementally advancing each of a plurality of sample containers in proximity to and beneath said access port in alignment therewith, said sample changer means including at least one sample holder having a plurality of substantially identical compartments with wall means substantially surrounding said sample container, each compartment having in the base thereof an aperture, said sample containers having a cross sectional configuration larger than said aperture for resting on said base;

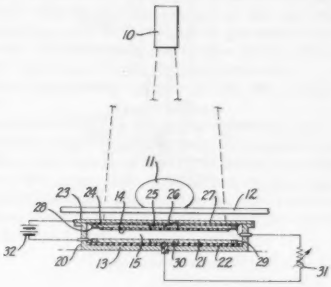
elevating means beneath said sample changer means and including a rod disposed in alignment with said access port, said rod being selectively operable through said sample changer means and said aperture for engaging the bottom surface of said sample container, said sample containers being guided into said access port by said wall means.

3,859,529

IONOGRAPHY IMAGING CHAMBER

Andrew P. Proudian, Chatsworth; Teodoro Azzarelli, and Murray Samuel Welkowsky, both of Los Angeles, all of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Continuation-in-part of Ser. No. 319,999, Jan. 2, 1973, abandoned. This application Aug. 14, 1973, Ser. No. 388,212
Int. Cl. G01t 1/18
U.S. Cl. 250—315 **15 Claims**



4. In an imaging chamber for an x-ray system, the improvement comprising:

first and second substantially planar electrodes;

means for mounting said electrodes in the chamber in spaced relation defining a gap therebetween;

means for connecting a power supply across said electrodes; and

means for maintaining along the gap surfaces of said electrodes, electrostatic potentials corresponding to the electrostatic potentials for concentric spherical metal electrodes,

with each of said first and second electrodes comprising a plurality of sections of low conductivity material, with each section of different and substantially uniform conductivity,

with said means for connecting including circuit means for connecting the power supply to the center of said first electrode and to opposite edges of said second electrode, and

with said means for maintaining including a resistance connected between opposite edges of said first electrode and the center of said second electrode completing a current path across the power supply to produce an electrostatic field in the gap,

with the conductivity per unit area of each section of said electrodes varying from a central zone to said edges such that the electrostatic potential at the ggap surfaces of the electrodes corresponds stepwise to the electrostatic potential for concentric spherical metal electrodes.

3,859,530

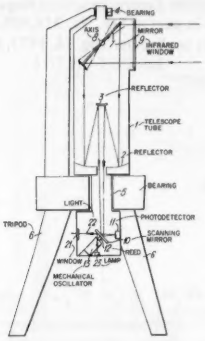
INFRARED DETECTION SYSTEM

Arthur Edward Brewster, Thaxted, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 6, 1973, Ser. No. 394,941
Int. Cl. G02b 17/00
U.S. Cl. 250—334 **6 Claims**

1. An infrared detection system comprising a telescope receiving an image, a scanning mirror within said telescope reflecting said image, an infrared photodetector in the focal plane of the telescope, a variable drive mechanical oscillator coupled to said scanning mirror to scan said image in a closed loop of adjustable shape and amplitude over said photodetector, display means, said oscillator scanning a display trace over said display means having a shape which is a replica of at least a portion of said image closed loop, means for modulating said trace by a signal derived from the output of said photodetector, said variable drive mechanical oscillator including an

electromagnet, means for energizing said electromagnet by two phase related signals whose relative phases and amplitudes are adjustable and a cantilever mounted reed supporting said mirror on said oscillator.



3,859,531

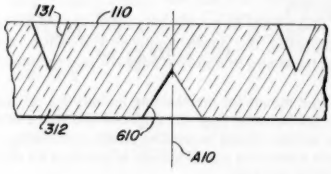
SCINTILLATION CAMERA WITH LIGHT PIPE INSERTS FOR IMPROVED LINEARITY

Nicolaas Van Dijk, Zandvoort, Netherlands, assignor to G. D. Searle & Co., Chicago, Ill.

Filed Feb. 23, 1973, Ser. No. 335,026

Int. Cl. G01t *1/20*

U.S. Cl. 250—366 **3 Claims**



1. An improved scintillation camera comprising a single crystal scintillator, a glass cover on said scintillator, a plurality of photomultiplier tubes spaced from said scintillator with overlapping fields of view thereof, a light pipe mounted between said glass cover and said photomultiplier tubes for conducting light from said scintillator to said photomultiplier tubes, circuit means coupled to said photomultiplier tubes for producing coordinate electrical signals representing spatial coordinates of interaction of a gamma ray with said scintillator, and a plurality of elements mounted in said light pipe underneath the interiorally located ones of said photomultiplier tubes for altering the distribution of light from gamma ray interactions in said scintillator to said photomultiplier tubes in a manner such that said coordinate electrical signals more accurately represent said spatial coordinates, each of said elements comprising a regular geometric volume of transparent material having substantially the same index of refraction as said light pipe and having on at least a portion of the surface thereof a coating of transparent material having an index of refraction substantially lower than that of said light pipe whereby said coated surfaces partly or totally reflect or transmit light depending on the angle at which said light strikes said coated surfaces.

3,859,532

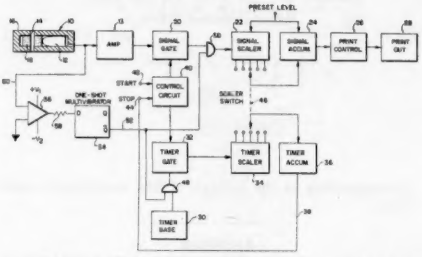
COSMIC ENERGY OVERLOAD DETECTOR

Samuel H. Luitwieler, La Habra, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 26, 1973, Ser. No. 344,821

Int. Cl. H03b *1/00*; G01t *1/20*

U.S. Cl. 250—369 **5 Claims**



1. In radiation source measuring apparatus having a signal channel transmitting signal pulses from a radiation source detector to an output device under control of a timer channel providing timing pulses indicative of a predetermined time period for measurement of the signal pulses, the combination comprising:

means coupled to the output of said detector for providing a signal only in response to a detector output in excess of a predetermined level; and

time delay means responsive to said signal for simultaneously inhibiting the timing pulses in said timing channel and the signal pulses in said signal channel for the predetermined time duration of said time delay means.

3,859,533

STORING DEVICE FOR FUEL ASSEMBLIES

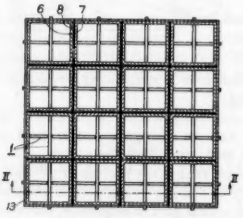
Antti Suvanto, Vasteras, Sweden, assignor to AB Asea-Atom, Vasteras, Sweden

Filed Nov. 15, 1973, Ser. No. 416,182

Claims priority, application Sweden, Dec. 21, 1972, 16779/72

Int. Cl. G21f *5/00*

U.S. Cl. 250—507 **1 Claim**

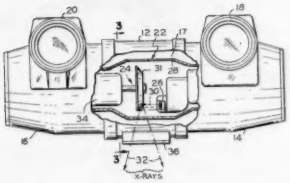


1. Storing device for fuel assemblies of substantially square cross-section, comprising a supporting grid (**1**) with a substantially square lattice, a plurality of tubes (**4**), the tubes having substantially square cross-section and being adapted to contain one fuel assembly each, a plurality of retaining means (**5**) for holding said tubes in position with respect to said supporting grid, an absorbing material (**8**) coating the walls of said tubes, each of said retaining means (**5**) being adapted to hold a pair (**6, 7**) of mutually parallel walls belonging to different tubes and arranged with a gap (**8**) between them, said walls crossing a side of said lattice, said gap containing a layer of absorbing material, the gap between said walls being sealed water-tightly at the top and bottom portions of said gap.

3,859,534
X-RAY TUBE HOUSING

Peter A. Loughlin, Buffalo Grove, Ill., assignor to Picker Corporation, Cleveland, Ohio

Filed Feb. 14, 1972, Ser. No. 225,739
Int. Cl. H01j *35/16*
U.S. Cl. 250—520 **9 Claims**



1. A rotary anode x-ray tube housing apparatus comprising: a hollow housing member having an x-ray transparent window portion;

means for mounting an x-ray tube having a rotary anode within said housing member so that x-rays emitted from said tube are transmitted through said window portion;

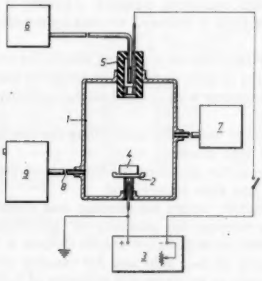
a tubular shield of x-ray absorbing material provided inside the housing member over the inner surface of said housing member, said shield having an opening aligned with said window portion; and

a tubular liner member of metal different from, and of a higher tensile strength than, the material of said housing member and said shield, said liner member being an integral, one-piece member provided within said housing member in position substantially completely surrounding said x-ray tube except for an opening aligned with said window portion to prevent destruction of the housing member in the event the x-ray tube breaks.

3,859,535
APPARATUS FOR IMPARTING CONTRAST TO A MICROSCOPE OBJECT

Gunter Bartz, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Filed June 12, 1972, Ser. No. 262,082
Claims priority, application Germany, June 21, 1971, 2130605
Int. Cl. B01k *1/00;* **A61**
U.S. Cl. 250—542 **1 Claim**



1. An apparatus for imparting contrast to the surface portion of an object to be investigated microscopically, the apparatus comprising:

a. a non-grounded vacuum chamber (**1**);

b. an object carrier (**2**) inside the vacuum chamber for disposing an object thereon, the carrier being connected to one wall of the chamber;

c. a high voltage D.C. source (**3**) outside the vacuum chamber, the positive pole of the D.C. source being connected to the object carrier and to the ground;

d. a combined electron-ion gun (**5**) of the gas discharging type mounted in the wall of the vacuum chamber opposite from the object carrier, the cathode of said combined electron-ion gun being connected to the negative pole of the D.C. source and being so adjusted that an electron-ion-beam derived from the gun impinges on an object, which is electrically conductive, positioned on the object carrier, and wherein the ion gun of the said combined electron-ion gun has a regulatable gas source connected thereto for bombarding said surface portion of an object with a gas concentrated electron ion-beam;

e. means for supplying a reagent gas into the vacuum chamber;

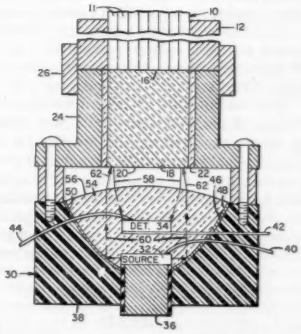
f. means for evacuating the vacuum chamber; and

g. switching means located between said negative pole and said electron-ion upon closing of which the voltage between the object and the electron-ion gun causes an electron-ion beam to impinge on the object where a layer characteristic of the component parts of the object material is formed.

3,859,536
OPTICAL COMMUNICATION SYSTEM SOURCE-DETECTOR PAIR

Frank L. Thiel, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,042
Int. Cl. G02b *5/14;* **G02f** *1/28*
U.S. Cl. 250—552 **10 Claims**



1. In an optical communication system of the type comprising an optical waveguide bundle for bidirectionally propagating optical signals, a bundle termination device comprising, in axial alignment with an end portion of said bundle,

optical mixer means having first and second opposed endfaces, said mixer means being characterized in that light received at any point on either endface thereof is distributed across the opposite endface, said first mixer endface being disposed adjacent to the endface of said end portion of said bundle,

a solid state light detector disposed adjacent to said second endface of said mixer means,

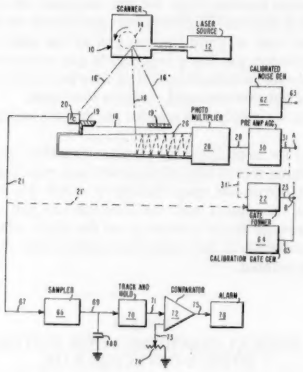
an edge-emitting solid state light source disposed on that side of said detector opposite said mixer means, and

means disposed in light receiving relationship with respect to said source for reflecting light emitted from said source toward said second endface of said mixer means.

3,859,537
INSPECTION SYSTEM FOR WEB MATERIALS

William Edward Wolf, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 15, 1973, Ser. No. 406,305
Int. Cl. G01n 21/30
U.S. Cl. 250—559 5 Claims



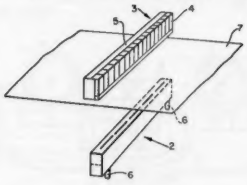
1. In an inspection system for web materials that includes electronic means responsive to means scanning the web for detecting a nonuniform appearance condition of the web, said electronic means providing a low signal-to-noise ratio signal having AC and DC components, the improvement comprising: a first DC extractor circuit coupled to said electronic means for extracting the DC component of said signal and providing an AC signal output; a low pass filter connected to said fist DC extractor circuit for permitting a preselected band of frequencies from said AC signal output representative of said nonuniform web appearance to pass through; a rectifier connected to said low pass filter, said rectifier producing a DC signal from said AC signal output, said DC signal having an RMS value representative of the said nonuniform web appearance; an averaging filter connected to said rectifier for producing a time-averaged signal from said DC signal level produced from said AC signal output, the persistence and magnitude of said nonuniform appearance condition being characterized by a change in amplitude of said time-averaged signal; and means for recording said time-averaged signal and signalling when said time-averaged signal exceeds a preselected threshold value.

3,859,538
FAULT DETECTOR FOR PAPER WEBS

Pentti Mannonen, Myyrmaki, Finland, assignor to Oy Stromberg AB

Division of Ser. No. 355,704, April 30, 1973,. This application Oct. 30, 1973, Ser. No. 411,146
Claims priority, application Finland, Nov. 22, 1972, 3287/72
Int. Cl. G01n 21/20
U.S. Cl. 250—572 13 Claims

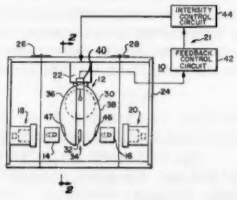
1. Fault detector apparatus for a web of paper or like material, comprising a light source consisting of a plurality of light-emitting devices and an array of photoelectric devices spaced therefrom and aligned therewith for receiving light emitted thereby, said photoelectric devices responsive to rapid fluctuations in the light transmitted by said web passing between said photoelectric devices and said light source, each said photoelectric device having associated therewith an amplification circuit comprising a diode junction series connected with said photoelectric device between terminal means adapted for connection across a first d.c. potential supply source and an amplification transistor connected between terminal means adapted for connection across a second d.c. potential supply source, said amplification transistor having a control electrode and further having diode junction characteristics substantially the same as those of the first-named said diode junction, and means connecting said control electrode to the junction of said photoelectric device and the first named said diode junction.



3,859,539
OPTICAL SYSTEM

Robert William Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Filed Apr. 25, 1973, Ser. No. 354,175
Int. Cl. G01n 21/26
U.S. Cl. 250—575 23 Claims



1. Apparatus for applying light from a primary light source to an object with a controlled intensity comprising:

a light-radiating member;

focusing means for focusing light emitted through a relatively large solid angle from said light source onto a spot on said light-radiating member, whereby a substantial amount of light is radiated by said light-radiating member;

said primary light source including means for emitting light in a plurality of directions with an intensity that fluctuates in one directionn with respect to the intensity in another direction;

electrical power means for controlling the intensity of light from said light source;

detector means for detecting the intensity of the light emitted from said light source; and

feedback control means for causing said electrical power means to increase the intensity of light from said light source when said detector means detects a decrease in the intensity of said light and for causing said electrical power means to decrease the intensity of light from said light source when said detector means detects an increase in the intensity of said light;

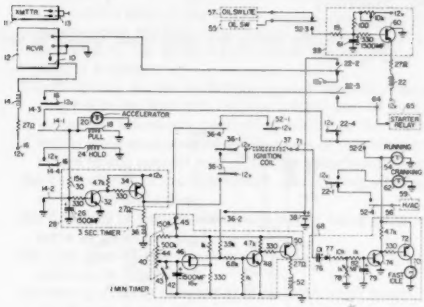
said detector means being positioned at a location where it receives substantial amounts of light flux from said primary light source;

said light-radiating member being sufficiently translucent to radiate light focused upon it from any direction equally in two opposite directions.

3,859,540
SYSTEM FOR REMOTE CONTROL OF THE STARTING OF MOTOR VEHICLES INCLUDING VISUAL INDICATION OF ACCELERATOR LINKAGE AND STARTER CIRCUIT ACTUATION

Irving Weiner, 503 Rhode Island Ave., Cherry Hill, N.J. 08034

Filed Dec. 13, 1973, Ser. No. 424,215
Int. Cl. H02p *9/04*
U.S. Cl. 290—38 **6 Claims**

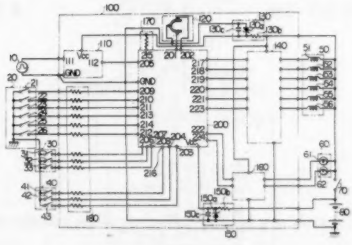


1. A system for remote-control starting of an internal combustion engine in a motor vehicle having an accelerator linkage and a starter circuit, said system including first relay means responsive to a radio control signal for actuating said accelerator linkage, second relay means responsive after a certain time delay to operation of said first relay means for operating said starter circuit, and separate visual display means operative respectively with said first and second relay means for respectively indicating to a remote operator the actuation of said accelerator linkage and the operation of said starter circuit.

3,859,541
ELECTRIC CONTROL SYSTEM FOR AUTOMOBILE EXHAUST EMISSION CONTROL SYSTEMS

Tadashi Hattori, Nishio; Hisato Wakamatsu, Toyota; Takamichi Nakase, Gamagori, and Shuzo Yoshida, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Aichi-ken, Japan

Filed Dec. 19, 1973, Ser. No. 426,199
Claims priority, application Japan, Dec. 26, 1972, 47-3086
Int. Cl. B60k *13/00*
U.S. Cl. 307—10 R **6 Claims**

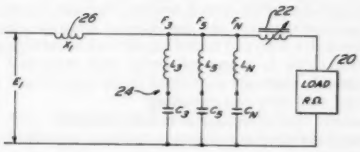


1. An electric control system for controlling solenoid valves for actuating exhaust emission control systems comprising:
- a pluraliity of sensors for generating digital signals indicative of operating parameters for setting control conditions,
- vehicle speed detecting means whereby a squarewave voltage having a frequency variable in response to the vehicle speed is generated when the vehicle speed is higher than a predetermined value and a squarewave voltage having a predetermined frequency is generated when the vehicle speed is lower than said predetermined value,
- a clock circuit for generating reference timing signals,
- a timing signal generating circuit connected to said clock circuit to generate predetermined timing signals,
- a speed signal generating circuit comprising a shift register and connected to said vehicle speed detecting means and said timing signal generating circuit to generate an output signal which is shifted one stage each time said squarewave signal attains a predetermined number of cycles in a predetermined time,
- a vehicle speed discriminating circuit connected to said speed signal generating circuit to determine whether the vehicle speed has reached a predetermined value,
- a control program circuit connected to said plurality of sensors and said vehicle speed discriminating circuit to perform a logical operation on said digital signals indicative of operating parameters and the signal from said vehicle speed discriminating circuit to generate a control signal, and
- means connected to said control program circuit to selectively actuate said solenoid valves.

3,859,542
HARMONIC AND POWER FACTOR COMPENSATION MEANS AND METHOD FOR POWER SYSTEMS CONTROLLED BY A NON-LINEAR DEVICE

Theodore R. Kennedy, Willingboro, N.J., assignor to Inductotherm Corporation, Rancocas, N.J.

Filed Sept. 12, 1973, Ser. No. 396,625
Int. Cl. H03h *7/02*
U.S. Cl. 307—88 R **7 Claims**



1. In an electrical power system comprising a load, power factor correcting means, a non-linear device for controlling the power delivered to the load, said non-linear device having an inductive reactance and filter means for filtering harmonic currents, the improvement comprising: said filter means including an inductive-capacitive filter for each of one or more significant harmonic currents, each inductive-capacitive filter being tuned to less than the harmonic frequency of the current which is to filter, and each of said inductive-capacitive filters having a net inductive reactance at the harmonic frequency being filtered by it.

3,859,543
SEQUENCING TIMERS

Slavko Milovancevic, P.O. Box 402, Torrance, Calif. 90508

Filed Mar. 2, 1973, Ser. No. 323,774
Int. Cl. H03k *17/28, 17/30, 17/72*
U.S. Cl. 307—293 **8 Claims**

1. A sequencing timer having a plurality of sequences all starting at the same time and produces a pulse at the end of each sequence, consists of:
- a d-c power source, having a positive and a negative terminal, said negative terminal is connected to a common lead, said positive terminal is connected to the first terminal of a power switch, while the second terminal of said power switch is connected to a supply lead,
- a clock frequency source includes a timing resistor connected between said supply lead and a first terminal of a

current limiting resistor whose second terminal is connected to the first plate of

a storage capacitor having the second plate connected to said common lead,

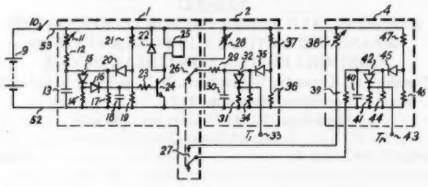
interconnection of said current limiting resistor and said storage capacitor is connected to the anode electrode of a Programmable Unijunction Transistor (PUT) whose cathode electrode is connected through a pulse forming resistor to said common lead,

gate electrode of said PUT is connected through a biasing resistor to said common lead, said interconnection of gate electrode and biasing resistor is connected also to the cathode electrode of

a compensating diode having anode electrode connected to interconnection of two PUT reference voltage resistors connected between said common and said supply lead,

said PUT cathode electrode is connected to a pulse stretching circuit which includes

anode electrode of a blocking diode whose cathode electrode is connected to the first plate of a capacitor, having the second plate connected to said common lead, a base resistor connected between the said diode-capacitor interconnection and a base electrode of



an n-p-n transistor having emitter electrode connected to said common lead and the collector electrode connected through a relay coil to said supply lead, a transient protection diode is connected across said relay coil having cathode electrode connected to the positive end of said coil, said relay coil operating

multiple sets of mutually isolated contacts, each set of contacts is utilized to pulse at least one sequencing circuit which includes

a normally open contact connected through a timing resistor to said supply lead,

a common contact being connected through a current limiting resistor to the interconnection of the first plate of a

storage capacitor, having second plate connected to said common lead, and an anode electrode of a PUT, whose cathode electrode is connected to an output terminal and to the first terminal of a cathode resistor, having second terminal connected to said common lead,

the gate electrode of said PUT is connected through a biasing resistor to said common lead and to the cathode electrode of a biasing diode, whose anode electrode is connected to the interconnection of

the two PUT reference voltage resistors connected between said common and said supply lead.

3,859,544

ACTIVE CIRCUIT FOR DELAYING TRANSIENT SIGNALS IN A TELEVISION RECEIVER

Leroy W. Nero, Fort Wayne, Ind., assignor to Warwick Electronics Inc., Chicago, Ill.

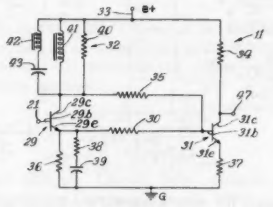
Filed Apr. 11, 1973, Ser. No. 350,113
Int. Cl. H03k *17/26, 5/159*
U.S. Cl. 307—293 **15 Claims**

1. An active delay circuit for providing from a transient input signal a delayed output signal, comprising: a summing circuit for providing an output signal from a plurality of input component signals; first means for providing to said summing circuit a first input component signal having a transient waveform similar to the transient input signal waveform; and second means effectively defining a resonant RCL circuit responsive to the input signal for concurrently providing to said summing circuit a second input component signal comprising a generally sine wave excursion (a) opposite in polarity to, (b) initiated substantially concurrently with and (c) having a half wavelength period substantially greater than the rise period of said first input component transient signal.

11. An active delay circuit for providing from an input signal having a rapid rise in amplitude level a delayed output signal, comprising:

an output transistor;

an input transistor having the input signal applied to the base thereof;



first resistance means connected between the emitter of the input transistor and the base of the output transistor;

a second resistance means connected between the collector of said input transistor and the base of said output transistor;

a parallel resonant circuit including (a) third resistance means, (b) a first inductance means, and (c) capacitance means, connected between said collector of the input transistor and the B+ power supply;

a fourth resistance means connected between the B+ power supply and the collector of said output transistor; and

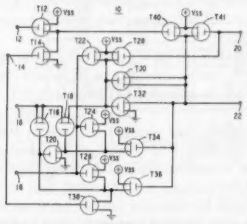
resistance means connected between the emitter of said output transistor and ground.

3,859,545

LOW POWER DYNAMIC CONTROL CIRCUITRY

Donald Gordon Clemons, Walnutport, and Paul Robert Schroeder, Wescosville, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 10, 1973, Ser. No. 423,297
Int. Cl. H03k *3/33, 17/04*
U.S. Cl. 307—296 **9 Claims**



1. A circuit comprising:

a first circuit means comprising a control port, a first port, and a second port;

the first circuit means being adapted to selectively appear as an essentially open or short circuit;

a second circuit means comprising a control port, a first port, and a second port;

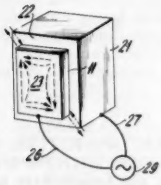
the second circuit means being adapted to selectively appear as an essentially open or short circuit;
the second port of the first means being coupled to the first port of the second means;
a first capacitive means, the first capacitive means being coupled between the first port and the control port of the second means;
a third circuit means comprising a control port, a first port and a second port;
the second port of the third circuit means being coupled to the control port of the second means, said third circuit means being adapted to selectively isolate or couple the first port of the third means to the control port of the second means;
fourth circuit means, including second capacitive means, coupled to the first port and the control port of the third means for selectively controlling when the third circuit means isolates or couples the first port of the third circuit means to the control port of the second circuit means;
the control port of the first circuit means being adapted to serve as an input port;
the first port of the second circuit means being adapted to serve as an output port;
the first port of the third circuit means being adapted to serve as an input port;
an input port being coupled to the fourth circuit means; and
the first port of the first circuit means, the second port of the second circuit means, and the fourth circuit means being adapted to be coupled to power supply means.

3,859,546

RECTANGULAR PIEZOELECTRIC CERAMIC RESONATOR OPPOSITELY POLED ALONG OPPOSITE SIDE SURFACES

Kikuo Doi, and Takehiro Futami, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Sept. 17, 1973, Ser. No. 397,751
Claims priority, application Japan, Sept. 19, 1972, 47-94368
Int. Cl. H01v *7/00*
U.S. Cl. 310—9.5 **6 Claims**



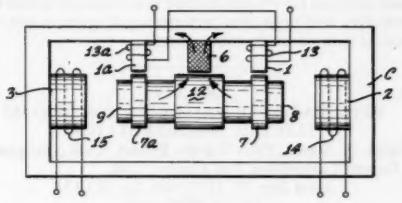
1. A torsional mode electromechanical transducer comprising:
a piezoelectric ceramic piece that is rectangular in outline and has a pair of opposing principal surfaces, and first and second sets of side surfaces extending between said principal surfaces;
an electrode attached to each principle surface respectively; and
said ceramic piece being poled in opposite directions along two paths formed by the first and second sets of the side surfaces toward both ends of a diagonal of the principal surface.

3,859,547

MULTI-POSITION SOLENOID WITH LATCHING OR NONLATCHING CAPABILITY

Philip E. Massie, 4220 Irving Pl., Culver City, Calif.

Continuation-in-part of Ser. No. 211,245, Dec. 23, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 390,037
Int. Cl. H02k *41/02*
U.S. Cl. 310—14 **16 Claims**



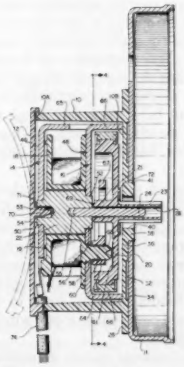
1. In a magnetic device in combination: means comprising a magnetic core member having salient stator poles having windings associated therewith; an armature positioned for reciprocating between said salient poles; and a permanent magnet carried by said core and associated with the armature whereby energization of alternate windings will cause the armature to reciprocate, the improvement comprising the armature having symmetrical salient poles, and said core having at least one additional salient stator pole and winding, said armature poles and additional salient stator pole being relatively positioned whereby to establish at least one additional intermediate position of said armature established by said additional salient stator pole, the relationship of said armature and core poles and said windings being such that said armature may be moved directly from any one position to any other position without stepping through intermediate positions.

3,859,548

PERMANENT MAGNET MOTOR

Edwin R. Morley, Two Rivers, and Robert A. Heinzen, Manitowoc, both of Wis., assignors to AMF Incorporated, White Plains, N.Y.

Filed May 18, 1973, Ser. No. 361,458
Int. Cl. H02k *15/00*
U.S. Cl. 310—42 **16 Claims**



1. A synchronous motor with stator and rotor parts axially aligned in a casing formed of electrical insulation material,

said casing comprising a shell with a top rim and having a bottom portion formed with pilot means, the axis of said assembled stator and rotor parts being aligned with reference to said pilot means, and a cover of electrical insulation material having a deformable resilient inner convex face for the top of the shell, said cover having a projection on the inner convex face thereof directly engageable with an adjacent stator part, said cover being deformed about said projection into engagement with said top rim and secured to said top rim of said shell such that said projection maintains said parts in centered relation with the said pilot means.

3,859,549

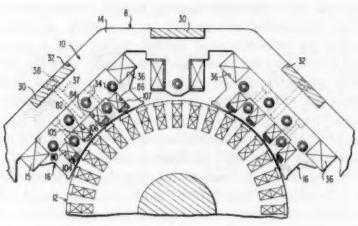
DETACHABLE POLE ASSEMBLY FOR DYNAMO ELECTRIC MACHINE STATOR

Walter F. Boesel, Palos Verdes Estates, Calif., assignor to Garrett Corporation, Los Angeles, Calif.

Filed July 27, 1973, Ser. No. 383,174

Int. Cl. H02k *1/18*

U.S. Cl. 310—218 **6 Claims**



1. A dynamoelectric machine comprising:

an armature;

primary current windings and compensator coil windings;

a yoke disposed around said armature and including:

a plurality of adjacently disposed plates, said plates including aligned recesses that define a plurality of grooves along the outer yoke periphery, and

a plurality of attachment flanges received in said grooves and being bonded to said yoke plates;

a plurality of pole shoes mounted on said yoke, each pole shoe including:

a base section formed of a plurality of adjacently disposed plates, said base plates defining shoulders supporting said primary current windings, and

a tip section formed of a plurality of adjacently disposed plates, said tip plates defining a curved pole face and including aligned apertures defining at least one opening extending through said tip section remote from said pole face, said tip section further including:

a connector bar disposed through said opening, and

clamping means mounted at opposite ends of said connector bar for firmly clamping said tip plates together;

said base and tip sections being relatively separable and including wall means that cooperatively define a plurality of slots receiving said compensator coil windings;

a cluster of strand-like elements disposed in each slot between said wall means and said compensator coil windings, said elements being bonded together and to said wall means by a binder material so as to define a rigid brace supporting said compensator coil windings against oscillation in said slots;

first releasable fastener means extending between said attachment flange and a respective base section to detachably secure said base section to said yoke;

second releasable fastener means connected between said connector bar and said base section to secure said tip section to said base section;

said second fastener means being operable independently of said first fastener means to draw said wall means together and clamp said compensator coil windings and said braces together in a manner allowing release of said primary current windings from said base section in the absence of removing said tip section from said base section.

3,859,550

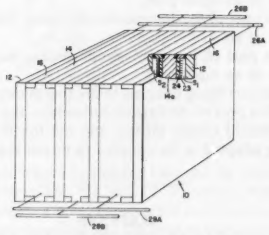
HYBRID RECTIFIER

Jerry W. Hagood, 307 Mountain Gap Rd., S.E., Huntsville, Ala. 35803; Jeo Shelton, 700 Tatom St., N.W., Huntsville, Ala. 35805, and Ralph L. Norman, 3644 Marymount Dr. N.W., Huntsville, Ala. 35810

Filed Dec. 6, 1973, Ser. No. 422,495

Int. Cl. H01j *1/02*

U.S. Cl. 313—309 **6 Claims**



1. A hybrid rectifier comprising: plural parallel collector plates, plural parallel electron emitter plates disposed respectively between said plural collector plates and parallel therewith, voltage means coupled to respective of said emitter and collector plates for coupling a potential thereacross and thereby developing an electric field therebetween, said emitter plates having first and second emitting surfaces for conducting electrons simultaneously from opposing faces thereof toward respective first and second collectors in response to an electric field developed therebetween, each of said emitter plates comprise a conductive sheet sandwiched between said emitting surfaces for electrically coupling said potential thereto, and each of said emitting surfaces comprises a field-effect electron emitter having a plurality of uniformly spaced parallel emitting pins disposed normal to said conductive sheet and an oxide metal insulator disposed between adjacent pins for insulating, encompassing, and supporting said pins.

3,859,551

HIGH-POWER ELECTRONIC TUBE, IN PARTICULAR A MICROWAVE TUBE WITH IMPROVED COOLING

Jacques Ninerailles, and Auguste Raye, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 11, 1973, Ser. No. 359,216

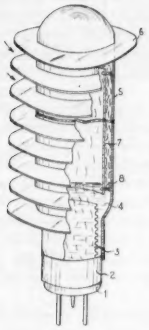
Claims priority, application France, May 16, 1972, 72.17440

Int. Cl. H01j *23/04*

U.S. Cl. 313—34 **4 Claims**

4. An electronic assembly comprising: an electronic tube having a collector and means to produce an electron beam to impact on said collector; a closed envelope comprising a hollow member supported on said electronic tube, said collector extending into the bottom end of said hollow member, said electronic tube and said envelope occupying a vertical position; a mass of liquid within said envelope and in contact with said collector, said mass of liquid occupying partially the interior volume of said closed envelope at the end of said envelope opposite the closed top end; the portion of said

volume not occupied by the liquid containing only the vapor of said liquid; and wick means disposed within said envelope



to channel the condensed vapor toward said liquid mass at the bottom of said envelope.

3,859,552

ELECTRON BEAM GENERATOR FOR TRANSIT-TIME ELECTRON DISCHARGE TUBES

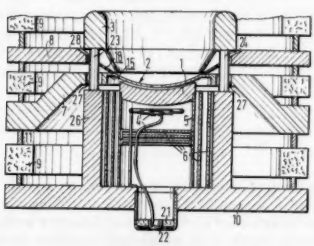
Richard Hechtel, Redwood City, Calif., assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Feb. 12, 1973, Ser. No. 331,809

Claims priority, application Germany, Mar. 2, 1972, 2210160

Int. Cl. H01j *29/00*

U.S. Cl. 313—449 **7 Claims**



1. An electron beam generator for transit time tubes with single beam operation at more than one power level and different beam cross sections corresponding to respective power levels and current intensities, comprising: a cathode for the emission of a single beam; a control grid spaced from said cathode; and an anode for receiving the electron beam, said control grid comprising a section which surrounds a central portion of the emissive area of said cathode for selectively receiving control potential for either blocking or permitting emission from the area of the cathode surrounding the central portion independently of the emission from the central portion to provide single beam operation with or without emission from said surrounding portion.

3,859,553

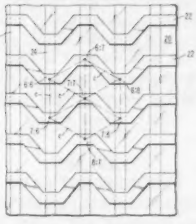
HEXAGONAL DISPLAY ARRAY HAVING CLOSE-PACKED CELLS

Theodore R. Touw, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 26, 1973, Ser. No. 400,746

Int. Cl. H01j *11/00*

U.S. Cl. 313—188 **2 Claims**



1. A gaseous discharge display panel comprising:

a gas filled envelope;

a first plurality of substantially parallel conductive lands disposed on one side of said envelope and a second plurality of substantially parallel conductive lands disposed on the opposite side thereof;

the coordinate intersections of said first and second lands being substantially orthogonal and defining a set of gaseous discharge cells;

said second set of lands having a staggered configuration such that each said cell is equidistant from six cells adjacent to said cell.

3,859,554

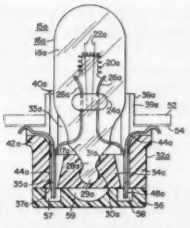
ELECTRIC LAMP WITH INTEGRAL PLASTIC BASE MEMBER

Luigi M. Preziosi, Livingston, and Bernard R. Fallon, Clark, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 13, 1968, Ser. No. 728,471

Int. Cl. H01k *1/46, 1/44*

U.S. Cl. 313—315 **19 Claims**



1. An electric lamp comprising, in combination;

a vitreous envelope that contains an energizable source of light and has a sealed portion at one end that is terminated by a tip of solid fused vitreous material which has a laterally protruding shoulder that defines a transversely extending recess in the sealed end portion of said envelope,

a plastic base member having (a) a cavity that is larger than the sealed end portion of said envelope and (b) a pair of channels that are spaced from and communicate with said cavity, said envelope and base member being disposed in operative relationship with one another with the sealed end portion of the envelope extending into the base cavity,

a pair of lead-in conductors extending through the sealed end portion of said envelope and into the respective channels in said base member, and

contactor means anchored in the respective channels of said base member and electrically connected to the portions of said lead-in conductors that are disposed in said channels,

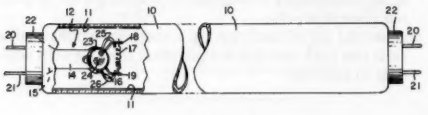
only the tip and adjacent recessed segment of the sealed end portion of said envelope being embedded in the interior part of the base member that defines the bottom of said cavity so that the resulting keyed interlocking juncture with the recess and shoulder of said envelope tip permanently joins the base member to said envelope, the remainder of the sealed end portion of said envelope being surrounded by but not embedded in said base member.

3,859,555

FLUORESCENT LAMP CONTAINING-AMALGAM-FORMING MATERIAL

Frank M. Latassa, Magnolia, and Tadius T. Sadoski, Salem, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Apr. 8, 1974, Ser. No. 458,621
Int. Cl. H01j *61/28*
U.S. Cl. 313—490 **8 Claims**



1. A low-pressure mercury vapor discharge lamp comprising:

an hermetically sealed, light-transmitting envelope containing an inert ionizable fill gas and a quantity of mercury,

a pair of electrodes sealed into opposite ends of said envelope,

at least one of said electrodes having a positive-temperature-coefficient thermistor electrically connected thereacross,

and an amalgam-forming material disposed on at least one surface of said thermistor, whereby said amalgam-forming material is heated by said thermistor during lamp operation for regulating the mercury vapor pressure of said lamp substantially independent of the ambient temperature about said lamp.

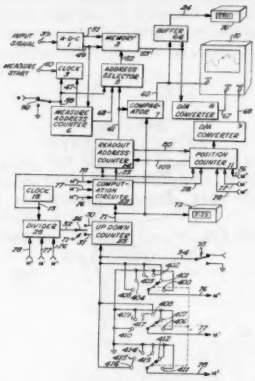
3,859,556

DIGITAL MEASUREMENT APPARATUS WITH IMPROVED EXPANDED DISPLAY

Robert W. Schumann, Madison, Wis., assignor to Nicolet Instrument Corporation, Madison, Wis.

Filed Nov. 15, 1972, Ser. No. 306,907
Int. Cl. H01j *29/70*
U.S. Cl. 315—24 **25 Claims**

1. In digital measurement apparatus including input means for receiving a signal and providing a plurality of data points representative of the signal, storage means connected to the input means for storing the data points in storage addresses, and display means connected to the storage means for visual display of the data points, the improvement comprising: first means connected to the storage means and the display means, for selecting any desired data point; second means connected to the first means and the display means for providing thereto a selectable magnification factor; and the first means including further means responsive to the selected data point and the selected magnification factor for controlling the addresses and



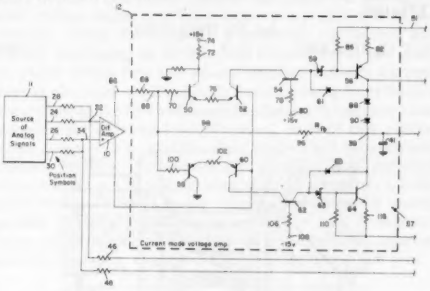
display positions of data points to be displayed on the display means.

3,859,557

HIGH SPEED MAGNETIC DEFLECTION AMPLIFIER HAVING LOW-POWER DISSIPATION

Jon H. Grant, Diamond Bar, and Raymond W. Pauly, Costa Mesa, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 177,879, Sept. 3, 1971, abandoned. This application July 5, 1973, Ser. No. 376,477
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **2 Claims**



1. A deflection amplifier responsive to signals applied thereto from a source of signals for controlling the current through an inductor for operating in a character writing mode and a slewing mode, said deflection amplifier including: a voltage amplifier stage having an input voltage amplifier section coupled to said source of signals and an output push-pull current source section; an impedance matching stage responsive to the output signals from said push-pull current source section and having output circuits coupled to said inductor so as to control the current therethrough; feedback means for applying a voltage representative of the current through the inductor, to the input of said input voltage amplifier section; positive voltage supply means responsive to the voltage across said inductor, for applying an output voltage of a first positive value when the voltage across the inductor is less than a preselected positive value in character writing mode and for applying an output voltage of a second positive value when the voltage across the inductor is greater than the preselected positive value in slewing mode; negative voltage supply means

responsive to the voltage across said inductor, for applying an output voltage of a first negative value when the voltage across the inductor is less negative than a preselected value in character writing mode and for applying an output voltage of a second negative value when the voltage across the inductor is more negative than said preselected negative value in slewing mode; means for coupling the output signals from said positive and negative voltage supply means to said impedance matching stage; and wherein said impedance matching stage includes means for deriving the current applied to said inductor from said output signals from said supply means; and wherein the improvement comprises:

means for applying the output signals from said positive and negative voltage supply means to said output push-pull current source section of said voltage amplifier stage so that a first current source section thereof is coupled between the output of said positive voltage supply means and a potential substantially equal to the voltage across said inductor, and so that a second current source section of said output push-pull section is coupled between the output of said negative voltage supply means and the potential substantially equal to the voltage across said inductor;

said means for applying an output signal from said positive and negative supply means being also coupled to said impedance matching stage so that a first stage thereof is coupled between said positive voltage supply means of a potential substantially equal to the voltage across said inductor, and so that a second stage of said impedance matching stage is coupled between the output of said negative supply means and the potential substantially equal to the voltage across said inductor;

said first positive supply voltage being applied during the character writing mode and said second positive supply voltage being applied during the slewing mode;

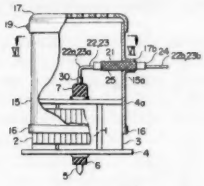
said first negative supply voltage being applied during the character writing mode and said second negative supply voltage being applied during the slewing mode; and

feedback means coupling the output of said push-pull current source section to the input voltage amplifier section of said voltage amplifier stage for providing a feedback signal for improving the small signal bandwidth thereof.

3,859,558
MAGNETRON HAVING SPURIOUS SIGNAL SUPPRESSION MEANS

Akikazu Harada, and Hiroshi Hisada, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 28, 1973, Ser. No. 392,299
Claims priority, application Japan, Sept. 1, 1972, 47-87171
Int. Cl. H01j *25/50*
U.S. Cl. 315—39.51 **10 Claims**

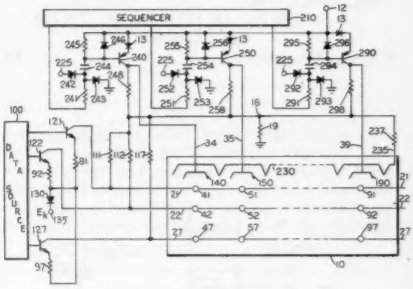


1. A magnetron comprising an anode and a cathode to define an operating space together with said anode; a plurality of cathode support bars to support said cathode; cathode leads connected with said plural cathode support bars and cathode lead-out wires connected with an external power source to supply electric power from said source for said cathode; a filter to eliminate noise signals connected between said cathode leads and said cathode lead-out wires; a stem to connect said cathode support bars with said cathode leads in vacuum condition; and a shield case to contain therein said filter and said stem, wherein said filter includes at least two microstrip type transmission lines having a configuration for choking at least one predetermined frequency component of an electromagnetic wave propagating therethrough and microwave attenuating substance covering said transmission lines for attenuating the wave over a wide frequency range.

3,859,559
SYSTEM FOR OPERATING MULTIPLE POSITION DISPLAY TUBES

David Glaser, Greenbrook, N.J., assignor to Burrough Corporation, Detroit, Mich.

Continuation of Ser. No. 139,543, May 3, 1971, abandoned.
This application Feb. 20, 1973, Ser. No. 333,496
Int. Cl. H05b *37/00*
U.S. Cl. 315—169 TV **10 Claims**



1. A character display circuit for displaying any one of a plurality of characters in each of a plurality of side-by-side character positions, comprising

a plurality of anodes, one in each of said character positions,

a plurality of groups of cathodes, each such group being associated with one of said anodes and being located in one of said character positions, each of the cathodes having the shape of a segment of one of the characters to be displayed,

each of said anodes and its associated cathodes being disposed in an ionizable gas atmosphere capable of sustaining cathode glow discharge,

a plurality of cathode conductors each electrically connected to one of the cathodes in each character position,

a plurality of cathode drivers, each connected to one of said cathode conductors, for energizing said cathodes selectively in response to a first set of input signals,

a plurality of anode selection circuits for selectively energizing said anodes, in synchronism with the selective energization of said cathodes, in response to a second set of input signals, for displaying selected characters in each of said character positions, by means of current flow from each anode through said gas atmosphere and through the selected cathodes which make up said selected characters, the magnitude of current flow at each character position being related to the number of cathodes energized at such position,

an auxiliary electrode in the gaseous atmosphere associated with each character position and including a portion disposed between each anode and its group of cathodes and an adjacent anode and its group of cathodes whereby each anode is shielded from the adjacent groups of cathodes,

bias circuit means for establishing a dynamic voltage bias on said auxiliary electrode,

said bias circuit means including impedance means connected electrically in series with all of said anode selection circuits for developing a bias voltage each time any one of said anode selection circuits is energized by an input signal and current flows therethrough, and circuit means electrically connecting said impedance means to said auxiliary electrode for supplying such bias voltage to said auxiliary electrode, and

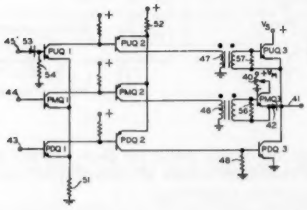
circuit means connecting each said cathode driver across at least a portion of said impedance means, so as to modify the effective impedance connected to said auxiliary electrode as each such cathode driver energizes one of said cathodes.

3,859,560

MULTIVOLTAGE LEVEL PLASMA DISPLAY PANEL SUSTAINER CIRCUITS

Edwin F. Peters, Vickery, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed July 13, 1973, Ser. No. 379,179
Int. Cl. H05b *41/23*
U.S. Cl. 315—169 TV **10 Claims**



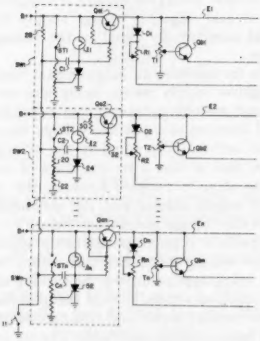
1. In a system for supplying operating potentials to a load device wherein at least one of two transverse oriented, spaced conductors is isolated by a dielectric layer from a gas discharge medium, said gas being spatially related to the spaced conductors to provide a discharge site for gas ionized in response to potentials imposed between said conductors, comprising a source of a relatively high direct current potential; a source of a relatively low direct current potential; an output connection to one of said conductors; a first power transistor connected between said high potential source and said output connection and operated as a normally open switch; a second power transistor connected between said low potential source and said output connection operated as a normally open switch; a control means for each of said power transistors to transfer its respective transistor between an open switch and closed switch condition; a clocking means for periodically operating said respective control means for each power transistor to transfer said power transistor between an open switch and closed switch condition; and inhibiting means responsive to any one of said control means being operated to transfer its respective power transistor to a closed switch condition for inhibiting operation of other of said control means to transfer its respective power transistor to a closed switch condition whereby, said relatively high direct current potential is applied to said conductor during the time said first power transistor is in a closed switch condition and said relatively low direct current potential is applied to said conductor during the time said second power transistor is in closed switch condition and said inhibiting means is effective to prevent coincident on switching states of said power transistors.

3,859,561

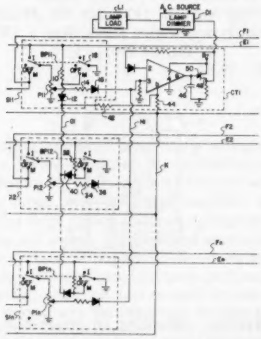
MULTIPLE SCENE LIGHTING CONTROLLER

Benjamin F. Gilbreath, 709 Parkview Cir., Richardson, Tex. 75080, and Hou Leh Yeh, 401 Ashland, Euless, Tex. 76039

Filed Apr. 20, 1973, Ser. No. 353,076
Int. Cl. H05b *37/02, 39/04*
U.S. Cl. 315—293 **21 Claims**



1. A lighting controller for controlling *m* dimmer units in a light dimming system, where *m* is greater than **1**, each of said dimmer units being responsive to a voltage level for controlling the flow of current through a corresponding lamp load, which comprises:



m circuit means, each responsive to a first signal for controlling the magnitude of a corresponding one of said voltage levels, each responsive to a second signal for controlling the rate of varying the magnitude of said corresponding

voltage level, and each responsive to a third signal for rapidly changing the magnitude of said corresponding voltage level independently of the rate control determined by said second signal to achieve the magnitude determined by said first signal;

means for connecting to a power supply;

a first conductor;

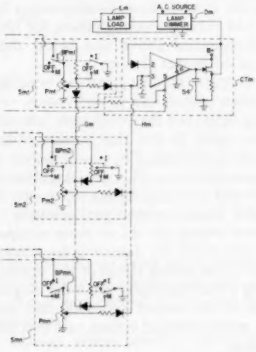
first switch means for selectively connecting said first conductor to said power supply connecting means;

m first adjustable means, each of which is connected to one of said circuit means and each being responsive to a current applied thereto for applying said first signal to said corresponding circuit means;

second adjustable means coupling said first conductor to all of said circuit means for applying said second signal to each of said circuit means;

a second conductor;

third adjustable means coupling said first conductor to said second conductor for applying a portion of the current



through said first conductor to said second conductor;

m second switch means, each for selectively coupling one of said first adjustable means to said first conductor for selectively controlling said first signal to said corresponding circuit means through said first adjustable means when said corresponding second switch means is in a first condition and for selectively coupling one of said first adjustable means to said second conductor for selectively controlling said first signal to said corresponding circuit means through said third adjustable means when said corresponding second switch means is in a second condition; and

means associated with each of said second switch means for applying said third signal to a corresponding circuit means when said associated second switch means is in said first condition and for preventing application of said third signal to said corresponding circuit means when said associated second switch means is in said second condition.

3,859,562

FLASH DEVICE

Zenzo Nakamura, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

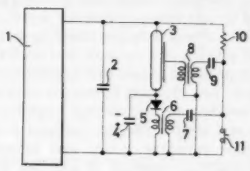
Filed June 21, 1972, Ser. No. 264,714

Claims priority, application Japan, June 23, 1971, 46-45399

Int. Cl. H05b *37/00*

U.S. Cl. 315—241 P **11 Claims**

1. A flash device, comprising a power source, a main capacitor charged by said power source, a discharge circuit for said main capacitor, a flash discharge tube which is provided in the discharge circuit, said discharge tube having a trigger electrode for triggering discharge, a diode in said discharge circuit, a transformer having a primary winding and having a secondary winding connected in series with the diode in the discharge circuit, a synchronizing contact switch connected to the primary winding for triggering said discharge tube, trigger



means having a trigger capacitor and a trigger coil coupled with the trigger electrode, and an auxiliary capacitor connected in parallel with said diode and the secondary winding for charging during trigger operation to add to the magnitude of the voltage applied by said main capacitor to the discharge tube and for discharging during discharge of the discharge tube.

3,859,563

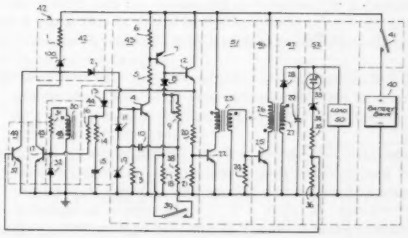
VOLTAGE CONVERTER AND REGULATOR

William J. Vogt, Commack, N.Y., assignor to Lumedyne, Inc., Commack, N.Y.

Filed July 9, 1973, Ser. No. 377,294

Int. Cl. G05f *1/20;* **H02p** *13/22*

U.S. Cl. 315—241 P **14 Claims**



4. A voltage converter, comprising:

a. storage capacitor means;

b. semi-conductor oscillator means responsive to a unidirectional power source, and in energizing relation with said

storage capacitor means to produce charging current for said storage capacitor means;

c. voltage sensing and regulating means responsive to the voltage across said storage capacitor means to regulate said voltage within a narrow range; and

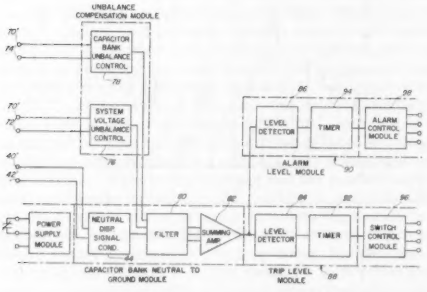
d. inductive coupling means coupled between said semiconductor oscillator means and said storage capacitor means and comprising a first inductive winding and a second inductive winding, wherein during a first portion of a cycle of said semi-conductor oscillator means, current is provided to energize said first winding of said inductive coupling means and no charging current is provided to said storage capacitor means from said second winding of said inductive coupling means, and during a second portion of a cycle of said oscillator means, no current is provided to said first winding from said oscillator means, and charging current is provided from said second winding to said storage capacitor means; and wherein said semi-conductor oscillator means comprises a transistor switching means and inductive feedback means inductively coupled to said first winding of said inductive coupling means and responsive to changes in the current flowing through said first winding, to prevent the commencement of said first portion of a cycle of said semi-conductor oscillator means while current is being supplied from said second winding of said inductive coupling means to said storage capacitor means, by energizing said transistor switching means when current ceases to be supplied to said first winding of said inductive coupling means from said semi-conductor oscillator means, to shunt current away from said first winding of said inductive coupling means; and wherein said semiconductor oscillator means further comprises variable resistance means to control the duration of said first portion of a cycle of said semi-conductor oscillator means.

3,859,564

APPARATUS FOR DETECTING NEUTRAL DISPLACEMENT OF A POLYPHASE SYSTEM

John Andrew Zulaski, 5 N. Owen St., Mount Prospect, Ill. 60056

Filed Mar. 19, 1973, Ser. No. 342,541
Int. Cl. H02h *7/16*
U.S. Cl. 317—12 R **30 Claims**



1. An apparatus for measuring electrical neutral displacement of a polyphase system utilized in an electrical power system at the neutral point of the polyphase system resulting from failure or inadvertent change of one or more components of the polyphase system by eliminating neutral displacement resulting from component tolerance error and power system unbalance comprising:

sensing means for measuring the total neutral displacement at the neutral point and for transmitting a neutral displacement signal representative of the total neutral displacement;

first compensating means for measuring the power system unbalance and transmitting a power system unbalance compensating signal representative of and equal and opposite to the portion of the neutral displacement signal corresponding to power system unbalance, said first compensating means including first isolating means for isolating the first compensating means from the power system, and first filtering means for filtering out harmonic frequencies above and below the primary frequency of the power system;

second compensating means for providing a component tolerance error compensating signal equal and opposite to the portion of the total neutral displacement signal corresponding to component tolerance error, said second compensating means including second isolating means for isolating the second compensating means from the power system, and second filtering means for filtering out harmonic frequencies above and below the primary frequency of the power system;

summing means for receiving and summing the total neutral displacement signal, the power system unbalance compensating signal and the component tolerance error compensating signal so that that portion of the neutral displacement signal caused by power system unbalance and component tolerance error are cancelled and the output signal of said summing means represents that portion of the neutral displacement signal resulting from failure or inadvertent change of one or more components;

first detection means for detecting the magnitude and time duration of the output signal of the summing means and providing a warning signal when the magnitude and time duration of the output signal of said summing means exceeds predetermined values, said first detection means comprising:

reference signal means for providing a reference signal including means to adjust the reference signal; and

comparator means for comparing the reference signal and the output signal of said summing means and providing a warning signal when the magnitude of the output signal of said summing means exceeds the magnitude of the reference signal;

second detection means for detecting the magnitude and time duration of the output signal of the summing means and automatically disconnecting the polyphase system from the power system when the magnitude and time duration of the output signal of the summing means exceeds predetermined values, said second detection means comprising:

reference signal means for providing a reference signal including means to adjust the reference signal; and

comparator means for comparing the reference signal and the output of said summing means and automatically disconnecting the polyphase system from the power system when the magnitude of the output signal of said summing means exceeds the magnitude of the reference signal.

3,859,565

FIRE PUMP CONTROL APPARATUS

Lee A. Henningsen, Eric, Pa., assignor to Firetrol, Inc., Erie, Pa.

Filed Aug. 20, 1973, Ser. No. 389,860
Int. Cl. H02h *9/00*
U.S. Cl. 317—13 R **14 Claims**

1. A self-contained fire pump control apparatus connected across the power lines for providing power to a fire pump

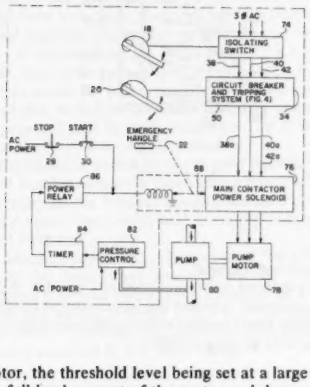
motor to maintain fluid pressure in a fire protection system comprising in combination:

a housing containing the apparatus;

a first manually operated circuit breaker serially coupled with the power lines for disconnecting power from the power lines;

second circuit breaker means serially coupled to said first circuit breaker means;

current responsive means coupled to the power lines and connected to said second circuit breaker means said current responsive means having a decreasing current threshold level in response to the start of the fire pump



motor, the threshold level being set at a large multiple of the full load current of the motor and decreasing to several times its full load current to maintain fluid pressure for fire protection;

third circuit breaker means serially coupled between said second circuit breaker means and the fire pump motor; and

pressure detection means coupled to the output of the fire pump for closing said third circuit breaker means to connect electrical power to the fire pump motor when the fluid pressure drops below a predetermined pressure level.

3,859,566

ARRANGEMENT FOR REMOVING ENERGY FROM A SUPERCONDUCTING MAGNET

Siegfried Gassong, and Dieter Kullmann, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 21, 1973, Ser. No. 417,799

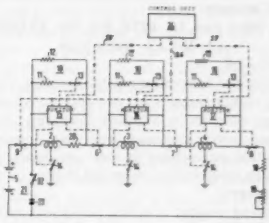
Claims priority, application Germany, Dec. 8, 1972, 2260231

Int. Cl. H02h *7/00*

U.S. Cl. 317—13 D **10 Claims**

1. In a superconducting magnet system wherein a plurality of individual magnets are connected in series and the series combination supplied by a common power supply through a first switch, each individual magnet having associated therewith a superconductivity monitoring device and a plurality of resistors for de-energization, said first switch being adapted to open in response to any one of said monitoring devices providing an output indicating normal conduction in its individual magnet, means to provide improved operation of the system during a quench condition comprising:

a. a plurality of switches, one being installed in each line connecting an individual magnet with another individual magnet; and



b. means responsive to an output from any of the monitoring devices to open all of said plurality of switches.

3,859,567

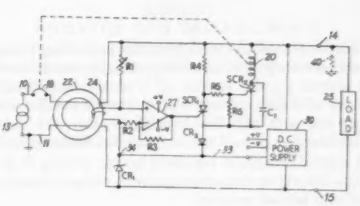
GROUND FAULT INTERRUPTER CIRCUIT WITH EXCITED SECONDARY WINDING ON DIFFERENTIAL TRANSFORMER

John J. Allard, Mishicot, Wis., assignor to AMF Incorporated, White Plains, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,222

Int. Cl. H02h *3/28*

U.S. Cl. 317—18 D **11 Claims**



1. A circuit for detecting a fault condition in a power distribution system and for producing in response to a detected fault a signal that is useful in the operation of current interrupter means in said system to interrupt current flow therein, said circuit comprising

at least first and second current carrying conductors for connecting a source of current for said system to respective load terminals, the first one of said conductors being grounded at said source,

transformer means having first and second like windings in series connection, respectively, with each of said two conductors, said first and second windings being wound in balanced relationship,

said transformer means including a multi-turn third winding inductively coupled to said first and second windings,

output means connected to said third winding for providing an output signal useful in the operation of a current interrupter means in said system,

means connecting said third winding to said source for passing a predetermined magnitude of current from said source through the third winding to establish at said output means, in the absence of a fault on one of said conductors, a signal of predetermined finite magnitude,

said third winding being wound to produce magnetic flux in the transformer means in opposition to flux produced by the second one of said windings.

3,859,568

OVERVOLTAGE SURGE ARRESTER WITH IMPROVED VOLTAGE GRADING CIRCUIT

Eugene C. Sakshaug, Lanesboro, Mass., assignor to General Electric Company

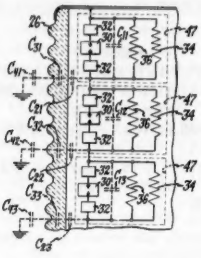
Filed Jan. 16, 1974, Ser. No. 433,655
Int. Cl. H02h *9/06*
U.S. Cl. 317—68 **8 Claims**

1. An electrical overvoltage surge arrester, comprising:

a housing comprising at least two conductive terminal members spaced apart by a hollow insulating member;

a spark gap section disposed inside said housing, said spark gap section comprising at least one spark gap assembly with a gap electrically connected in series with said terminal members;

a first grading resistor of a first non-linear resistance material electrically connected in parallel with the gap of said spark gap assembly, the degree of non-linearity of said first material being indicated by a first numerical exponent for the voltage in an equation describing the general current-voltage characteristics of said first material, and



a second grading resistor of a second non-linear resistance material electrically connected in parallel with said gap and with said first grading resistor, the degree of non-linearity of said second material being indicated by a second numerical exponent for the voltage in an equation describing the general current-voltage characteristics of said second material,

said first exponent being substantially greater than said second exponent.

3,859,569

OVERVOLTAGE SURGE ARRESTER WITH IMPROVED VOLTAGE GRADING CIRCUIT

James S. Kresge, Pittsfield, Mass., assignor to General Electric Company

Filed Jan. 16, 1974, Ser. No. 433,656
Int. Cl. H02h *9/06*
U.S. Cl. 317—68 **8 Claims**

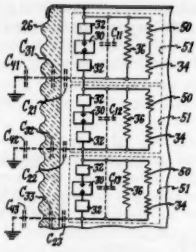
1. An electrical overvoltage surge arrester of the type including:

a housing comprising at least two conductive terminal members spaced apart by a hollow insulating member;

a spark gap section disposed inside said housing, said spark gap section comprising at least one spark gap assembly electrically connected in series with said terminal members;

a first grading resistor of a first nonlinear resistance material electrically connected in parallel with said spark gap section, the degree of nonlinearity of said first material being indicated by a first numerical exponent for the voltage in an equation describing the general current-voltage characteristics of said first material, and

a second grading resistor of a second nonlinear resistance material electrically connected in parallel with said spark gap section and with said first grading resistor, the degree of nonlinearity of said second material being indicated by a second numerical exponent for the voltage in an equation describing the general current-voltage characteristics



of said second material,

said first exponent being substantially greater than said second exponent, wherein the improvement comprises;

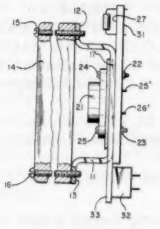
a substantially linear resistor electrically connected in series with said first grading resistor.

3,859,570

POWER TRANSISTOR MOUNTING

Joseph L. Veranth, Marlboro, and Louis Poulo, Wayland, both of Mass., assignors to Bose Corporation, Framingham, Mass.

Filed Feb. 20, 1973, Ser. No. 333,975
Int. Cl. H02b *1/00*
U.S. Cl. 317—100 **2 Claims**



1. Power semiconductor device mounting apparatus comprising,

a power transistor,

bracket means of high thermal conductivity for supporting and carrying heat from said power transistor and formed with an opening for accommodating leads from said power transistor,

circuit board means for establishing electrical connection to said leads and having a foil side and secured to said bracket means by means for fastening said bracket means to said circuit board means including said power transistor,

said power transistor and said circuit board means sandwiching a portion of said bracket means therebetween with said foil side away from said bracket means,

said power transistor leads being soldered to said foil side, a heat sink,

said bracket means formed with portions thereof for attachment to said heat sink in good thermal contact therewith, said heat sink being fastened to said bracket means in good mechanical and thermal contact therewith with said power transistor means between said bracket means and said heat sink means whereby said bracket means comprises means for fastening said circuit board means to said heat sink so that the assembly including said circuit board means and said bracket means may be removed, tested and serviced as a complete module,

and thermostatic switch means in good thermal contact with said bracket means for interrupting power when the temperature of the bracket means exceeds a predetermined limit value even when said assembly is separated from said heat sink,

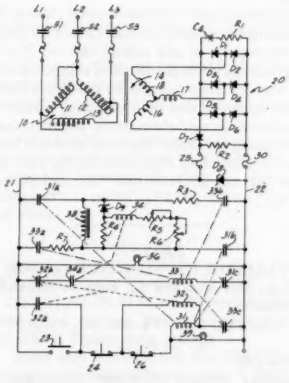
said bracket means being formed with flanges in substantially the same plane spaced from the portion thereof formed with said opening for engagement with said heat sink and having a flange with a free end substantially in the plane of said opening with said thermostatic switching means attached to the latter flange.

3,859,571

CONTROL CIRCUIT FOR A LIFTING MAGNET

Fred A. Strobl, Chicago, and Louis F. Ranieri, Niles, both of Ill., assignors to Kory Industries, Inc., Chicago, Ill.

Filed Nov. 27, 1973, Ser. No. 419,398
Int. Cl. H01f *7/18*
U.S. Cl. 317—123 **3 Claims**



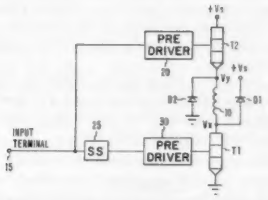
1. A control circuit for an electromagnet comprising, a direct current power supply with first and second terminals, a first switch connected between the one terminal of said power supply and one side of said electromagnet, a second switch connected between the second terminal of said power supply and the other side of the electromagnet, a first relay controlling said first and second switches, a third switch connected in circuit with said first relay and said power supply to energize it, a first resistor, a unilateral current device connected in series with said first resistor and the electromagnet in parallel with said first resistor and unilateral current device, a second relay having an energizing coil, a second resistor connected in series with energizing coil of said second relay and said first resistor in parallel with the energizing coil of said second relay and said second resistor, a third relay, a fourth switch controlled by said second relay and connected to said third relay and the combination connected across said power supply, a fifth switch controlled by said third relay and connected between said one terminal of said power supply and said other side of said electromagnet, a sixth switch controlled by said third relay and connected between said second terminal of said power supply and said one terminal of said electromagnet, a third resistor connected between said fifth switch and said other side of said electromagnet, said unilateral current device is a selenium rectifier with zener characteristics, and a fourth relay with one terminal connected to one terminal of the first relay, and a seventh switch connected between the other terminal of said fourth relay and the other terminal of said first relay, an eighth switch controlled by said fourth relay and connected in circuit with said third relay.

3,859,572

MAGNETIC COIL DRIVER CIRCUIT

Steven D. Keidl, Rochester, and James F. Nelson, Pine Island, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1973, Ser. No. 342,109
Int. Cl. H01h *47/00, 47/32*
U.S. Cl. 317—148.5 R **7 Claims**



1. A magnetic coil driver circuit comprising:

a source of power supply voltage,

circuit means including first and second current switches for connecting said magnet coil directly across said power supply voltage in one direction, and first and second unilateral current conducting devices responsive to being

forward biased for connecting said magnet coil across said power supply voltage in a reverse direction, and

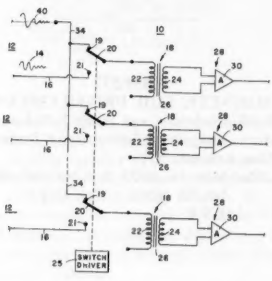
control means for selectively operating said circuit means to first simultaneously turn said first and second current switches on to connect said magnet coil directly across said power supply in one direction and thereby energize said coil whereby the coil current rises linearly and reaches a level determined by said power supply voltage, the length of time said coil is energized, and the inductance of said coil and after a predetermined time delay turn off said first current switch to allow current circulating in said coil to decay whereby said circulating current maintains said coil energized with a holding current and then turn off said second current switch prior to said circulating current dropping below holding current level whereby said first and second unilateral current conducting devices connect said magnet coil across said power supply in said reverse direction to de-energize said magnet coil.

3,859,573

SIMULTANEOUS MULTI-CORE DEMAGNETIZATION

Lee E. Siems; Ben B. Thigpen, and Charles C. Harman, all of Houston, Tex., assignors to Digital Data Systems, Inc., Houston, Tex.

Filed Oct. 1, 1973, Ser. No. 402,639
Int. Cl. H01f *13/00*
U.S. Cl. 317—157.5 **4 Claims**



4. A method for demagnetizing an input transformer having a core, a primary winding and a secondary winding connected to a load, the load having a linear operating mode when the amplitude of an AC signal applied to the primary winding of the load's input transformer is below a critical value, and the load having a non-linear operating mode when the amplitude of the applied AC signal exceeds said critical value, the improvement comprising:

wiping said core with a decaying AC signal having an initial amplitude up to said critical value and a frequency corresponding to said critical value, the value of said frequency being selected to saturate each core.

3,859,574

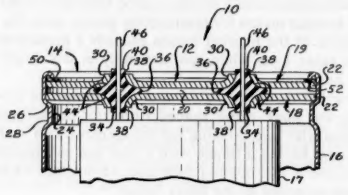
ELECTROLYTIC CAPACITOR WITH IMPROVED HEADER AND METHOD OF MAKING SAME

Robert L. Brazier, Pickens, S.C., assignor to Sangamo Electric Company, Springfield, Ill.

Filed Oct. 19, 1973, Ser. No. 407,800
Int. Cl. H01g *9/10, 13/00;* **H05k** *5/06*
U.S. Cl. 317—230 **13 Claims**

1. An electrolytic capacitor having a casing with at least one open end section, a support surface adjacent the open end section, and a rolled over edge, a capacitor section within the casing, a header supported on said support surface and closing the open end section of the casing; said header including first and second end closing members, each of said closing members having at least one aperture formed therein forming at least one lead hole, said lead hole in said first closing member being axially aligned with said lead hole in said second closing member; and first sealing means including an elastomeric member being located and aligned within said lead holes of said first and second closing members, a lead wire extending through said elastomeric member and connected with the capacitor section, said rolled over edge being so arranged relative to said support surface that said first and second closing members are compressed by and between said edge and said shoulder thereby compressing and distending said elastomeric member and providing a first compression seal with said first closing member, a second compression seal with said second closing member and a third compression seal with said lead wire.

13. The method of closing off an open end electrolytic capacitor having a casing with a shoulder, an edge portion and a capacitor section having operatively connected thereto a terminal lead by a header which includes at least first and second closing members, each of which has at least one apertured protrusion to define a lead hole for the terminal lead and an elastomeric member located between said first and second closing members comprising the steps of:



inserting a first closing member inwardly of the open end, with the terminal lead extending through said lead hole, until said first closing member abuts and is supported on said shoulder;

sliding said elastomeric member along said terminal lead until said terminal lead extends through said elastomeric member and until a portion of said elastomeric member is urged into said lead hole on said first closing member; moving the second closing member inwardly of said open end until the upper portion of said elastomeric sealing member is urged into said lead hole in said second closing member;

mounting a seal member on said second closing member so that the outer periphery thereof coincides with the interior configuration of said casing; and

applying generally inwardly directed compressive forces, by rolling over the edge portion, in order to effect a closing off of the open end and simultaneously effect a compression seal between said elastomeric member, said first and second closing members and said terminal lead by concomitantly distending and compressing said elastomeric member located between said first and second closing members.

3,859,575

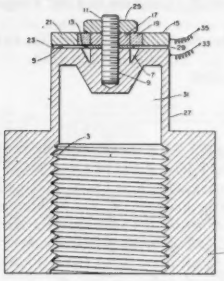
VARIABLE CAPACITANCE SENSOR

Shih-Ying Lee, and Yao-Tzu Li, both of Huckleberry Hill, Lincoln, Mass. 01773

Filed Feb. 11, 1974, Ser. No. 441,026
Int. Cl. H01g *7/00*
U.S. Cl. 317—246 **6 Claims**

1. A pressure sensing capacitor comprising an edge-supported elastic member responsive to pressure having a conducting portion, a flat electrode member with a central support means, a periphery conductive means and an insulative means connecting said periphery conductive means and said central support means in fixed spaced relationship, means

physically in contact with the center of said elastic member responsive to pressure and said central support means and spacing said periphery conductive means and said conducting



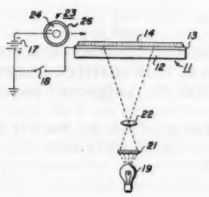
portion of said elastic member in capacitive relationship whereby when force is applied to the center of the elastic member the spacing between the conducting portion and the periphery conductive means will vary.

3,859,576

HIGH PERFORMANCE BLOCKING ELECTRODE FOR ELECTROPHOTOPHORESIS

Addison C. Sheckler, Cato, and Luke C. Lin, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 15, 1973, Ser. No. 332,974
Int. Cl. H01t *19/00*
U.S. Cl. 317—262 A **15 Claims**



1. A blocking electrode for use in a photoelectrophoretic imaging process comprising:

a. a conductive support having means for coupling to an electrical energy source;

b. a polymeric layer in contact with said conductive support;

said polymeric layer comprising a polymeric material having from about 20 to about 90 percent by weight of a finely divided ferroelectric material dispersed therein, said ferroelectric material having a dielectric constant of at least about 15.

3,859,577

SYSTEM FOR ADJUSTING AND COMMUTATING CURRENT IN MACHINE WINDINGS

Albert Wiart, Val D'Oise, France, assignor to Jeumont-Schneider, Paris, France

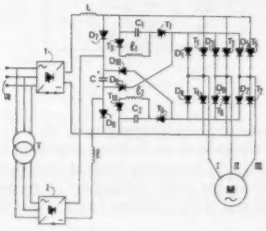
Filed July 2, 1973, Ser. No. 375,725
Claims priority, application France, July 3, 1972, 72.23931
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 **7 Claims**

1. A circuit for commutating current in the windings of an *n*-phase electrical machine wherein an AC supply is connected to a reversible inverter having DC output connections, said circuit comprising:

a. inductor means having one end connected to one DC output connection of said reversible inverter for adjusting and smoothing the current of said one DC output connection during commutating and non-commutating operations.

b. a 2 *n*-arm thyristorized routing bridge having an input and an output side with *n* center points, said *n* center points connected to the *n* phase electrical machine, one side of said routing bridge connected to said inductor means, the other side of said routing bridge connected to the other DC output connection of said reversible inverter,

c. a 2 *n*-arm diode bridge having an input and an output side with n center points, said *n* center points connected to the *n*-phase electrical machine,



d. turn-off circuit means connected between each side of said diode bridge and a corresponding side of said routing bridge for establishing a voltage difference between corresponding sides of said diode and said routing bridges for turning off the routing thyristors of said routing bridge, and

e. transitional-commutating circuit means connected between each side of said diode bridge and the corresponding side of said routing bridge for sampling the reactive commutating energy produced in said machine windings, said transitional-commutating circuit means and said inductor means connected in a series current path between said supply and said machine windings during commutation.

3,859,578

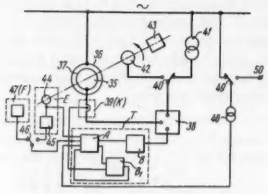
METHOD AND CIRCUIT FOR CONTROLLING AN ASYNCHRONIZED-SYNCHRONOUS MACHINE

Mikhail Moiseevich Botvinnik, 3, Frunzemskaya ulitsa, 7, kv. 154; Jury Gevondovich Shakaryan, Festivalnaya ulitsa, 15, korpus 4, kv. 101; Ivan Yakovlevich Dovganjuk, ulitsa N. Krupskoi, 5, kv. 40; Boris Petrovich Klimov, Malaya Tulskaya ulitsa, 2/1, korpus 4, kv. 281, all of Moscow; Mikhail Ivanovich Zhuchkov, Moskovsky prospekt, 96a, kv. 220, Kharkov; Jury Gordeevich Borzyak, Armyansky pereulok, 1/3, kv. 76, Kharkov; German Mikhailovich Tjufilin, Moskovsky prospekt, 192/1, kv. 46, Kharkov; Mikhail Vladimirovich Baksht, Pavlovo pole, 81, kv. 9, Kharkov; Nikolai Nikolaevich Blotsky, 2 Kievskaya ulitsa, 24, kv. 8; Tatyana Vasilievna Plotnikova, Sojuzny prospekt, 22, korpus 2, kv. 171, both of Moscow, and Oleg Nikolaevich Filichev, Kandalakshsky raion poselok, Zarechensk, Nivskaya ulitsa, 5, kv. 3, Murmanskaya oblast, all of U.S.S.R.

Filed Jan. 22, 1973, Ser. No. 325,932
Int. Cl. H02p *7/36*
U.S. Cl. 318—197 **17 Claims**

1. A method of controlling an asynchronized-synchronous machine comprising; impressing a voltage of varying frequency, phase and amplitude on the rotor or stator winding of the machine, varying the frequency of said voltage in proportion to an angle between the voltage vector of a power supply mains connected to the stator or rotor winding and the e.m.f. vector of a synchronous tachometer generator connected with a rotor shaft of the machine, varying the amplitude of said

voltage in proportion to the slip of the machine, forming two independently controlled e.m.f. components induced by the rotor or stator currents in the stator or rotor winding of the machine, one said e.m.f. component coinciding with the direction of the voltage vector of the stator or rotor circuit, the



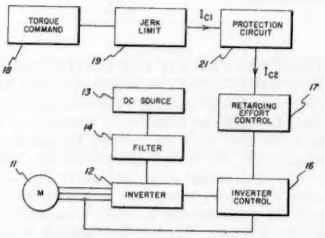
other component being perpendicular to this vector, and varying the amplitude of the former component in accordance with the setting of a frequency-forming means, while varying the amplitude of the latter component in proportion to the instantaneous slip of the machine being controlled.

3,859,579

PROTECTION CIRCUIT FOR POWER CONVERTER SYSTEMS

Allen B. Plunkett, Lawrence Park, Pa., assignor to General Electric Company, Erie, Pa.

Filed Jan. 27, 1974, Ser. No. 436,165
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **20 Claims**



1. An improved protective circuit for a propulsion system of the type having an ac motor, a dc power source, an inverter, and an inverter control circuit responsive to a current command signal to maintain the current flow between the inverter and motor at a level equal to the current command signal, wherein the improvement comprises:

a. means for simultaneously monitoring a plurality of propulsion system parameters and comparing each with its associated predetermined limit to derive at a plurality of error signals;

b. means for comparing said plurality of error signals and selecting the greatest one; and

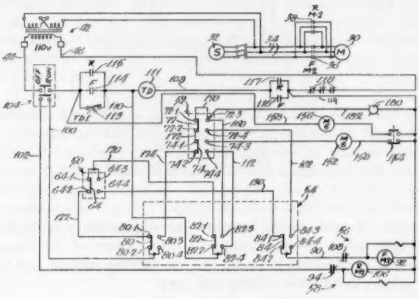
c. means for applying said greatest signal to modify the current command signal in direct proportion thereto so as to thereby reduce the magnitude of said greatest signal.

3,859,580

APPARATUS FOR CONTROLLING TRAVELING BRIDGES

Marvin A. Jones, Chicago, and Joseph Galuska, Elmwood Park, both of Ill., assignors to FMC Corporation, Chicago, Ill.

Filed Sept. 28, 1973, Ser. No. 401,936
Int. Cl. H02p *3/00*
U.S. Cl. 318—280 **15 Claims**



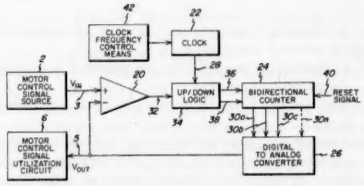
1. A sewage treatment tank having a traveling bridge reciprocated thereon; reversible motor means for driving said bridge; circuit means controlling said motor means, said circuit means including primary position responsive means cooperating with said motor means for reversing said motor means and secondary position responsive means for continuing reversal of said motor means when said primary position responsive means malfunctions; and means spaced along said tank for actuating said position responsive means.

3,859,581

ANALOG TO DIGITAL TO ANALOG RATE CONTROL CIRCUIT FOR TRACTION MOTOR CONTROL SYSTEMS

Alvin L. Gardner, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Jan. 11, 1974, Ser. No. 432,513
Int. Cl. H02p *5/00*
U.S. Cl. 318—397 **10 Claims**



1. In a motor control system wherein a motor control signal source supplies motor control input signals for application to a motor control signal utilization circuit which regulates performance of a motor, means for limiting the acceleration rate of said motor comprising:

a. a clock source generating periodically recurring clock pulses;

b. bidirectional counting means for algebraically adding said clock pulses to generate a digital count;

c. conversion means for converting said digital count into a corresponding analog signal;

d. coupling means to couple said analog signal as a control output signal, to said motor control signal utilization circuit.

e. steering means connected to continuously cause said bidirectional counting means to selectively add or sub-

tract clock pulses responsive to comparison of the magnitudes of said control input and of said control output signals;

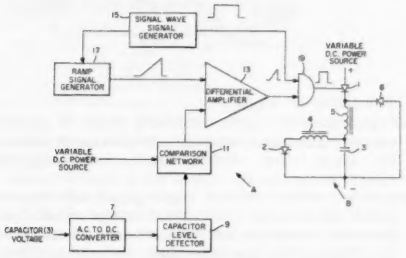
f. means for establishing the recurence frequency of said clock pulses to limit the maximum incremental change per unit time of the magnitude of the control output signal so that the magnitude of the motor control output signal varies proportionately but at a predetermined maximum rate of change, in respect to the control input signal.

3,859,582

CIRCUIT FOR CONTROLLING THE CHARGE ON A CAPACITOR FROM A VARIABLE VOLTAGE SOURCE

Robert F. Kautz, Spring Lake; Leo B. Bourgeault, Wall Township, and Raymond G. Lane, Manasquan, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 17, 1973, Ser. No. 397,510
Int. Cl. G05f *1/44, 1/46, 5/00*
U.S. Cl. 320—1 **4 Claims**



1. A circuit for providing gate logic signals for turning a silicon controlled rectifier on for a period of time required to charge a capacitor in a resonant inductance capacitance circuit to a predetermined voltage level from a variable direct current power source even though the capacitor may retain a portion of its charge from the previous charge-discharge cycle, comprising: a square wave signal generator for generating square wave signals, a ramp signal generator connected to the square wave signal generator and generating ramp signals in timed relationship to the square wave signals, means for providing signals corresponding to the difference between the variable direct current power source and the capacitor voltage level, and means connected to the means for providing difference signals, to the ramp signal generator, and to the square wave signal generator and providing gate logic signals of a width to turn on the silicon controlled rectifier for the time necessary to charge the capacitor to a predetermined voltage level from the variable direct current power source.

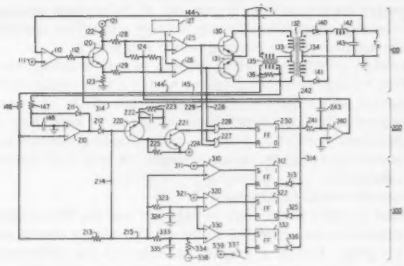
3,859,583

PULSE-WIDTH MODULATION CONVERTER CIRCUIT PROVIDING ASYMMETRY CORRECTION AND CURRENT MONITORING

Ray Allen Reed, Bolingbrook, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 23, 1973, Ser. No. 408,609
Int. Cl. H02p *13/22*
U.S. Cl. 321—2 **13 Claims**

6. In a dc-to-dc voltage converter circuit, in combination, a pulse-width modulation stage comprising a first and a second conducting element, a common output circuit path for said conducting elements, a first and a second drive circuit means for alternately generating first and second drive signals for alternately causing said first and second conducting elements to generate first and second alternating output signals for predetermined time durations in said common output circuit path, and first control circuit means operated responsive to a variation of both said first and second output signals from a predetermined signal level for controlling said first and second drive circuit means to adjust said time durations of said first and second output signals in the same direction; and an output signal symmetry monitoring stage comprising a transformer connected in said common circuit path for tapping first and second monitoring signals representative, respectively, of said



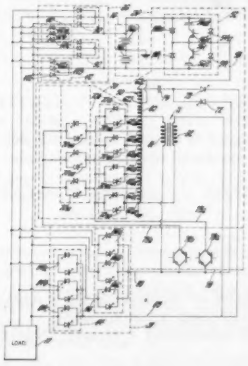
first and second output signals, circuit means responsive to the monitoring signal of greater amplitude when said first and second monitoring signals differ in amplitude for generating a first symmetry control signal, circuit means for combining said first symmetry control signal and said first and second drive signals for generating a second symmetry control signal, and second control circuit means operated responsive to said second symmetry control signal for controlling said first and second drive circuit means to adjust said time durations of said first and second output signals in opposite directions.

3,859,584

APPARATUS FOR GENERATING THREE PHASE SINUSOIDAL VOLTAGES

Thomas M. Corry, Goleta, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 13, 1974, Ser. No. 450,818
Int. Cl. H02m *7/52*
U.S. Cl. 321—5 **3 Claims**



1. A three phase inverter effective to generate substantially sine wave voltages across a set of three phase line conductors from a unidirectional voltage source having a center tap, the three phase inverter comprising:

a first inverter means connected between the source and the line conductors for producing three-phase, flat-top, full-wave voltages on the respective line conductors in relation to the center tap;

a second inverter means connected to said source and operable to produce a single phase flat top voltage signal at a predetermined frequency;

an inductor having a plurality of taps including a high voltage tap;

means for coupling said inductor between said second inverter means and the center tap of the voltage source, whereby alternating flat top voltage excitation appears thereacross at said predetermined frequency;

a voltage generating means coupled to said inductor, said first voltage generating means having a first output conductor and means to connect the taps of the inductor sequentially to the first output conductor in ascending or descending order to produce corresponding stepped sequentially rising or falling voltages on said first output conductor;

a second output conductor;

means coupled to the high voltage tap and the first output conductor for supplying to the second output conductor a voltage having a magnitude equal to the difference between the magnitude of the voltage at the high voltage tap and the voltage on the first output conductor;

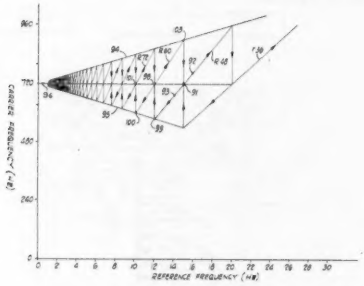
and means for selectively coupling the first and second output conductors to the three phase line conductors in timed relation to the three phase flat top full wave voltages to approximate a balanced and symmetrical voltage on each line conductor.

3,859,585

MULTIPLE CONTROL WAVE FORM CIRCUIT

Udo H. Meier, Luzern, Switzerland, assignor to Reliance Electric Company, Cleveland, Ohio

Filed Dec. 6, 1973, Ser. No. 422,302
Int. Cl. H02p *13/18*
U.S. Cl. 321—9 A **12 Claims**



1. An apparatus for multiple control of a first and a second wave form, comprising in combination:

a circuit for establishing a variable frequency first wave form;

a generator for establishing the second wave form;

first control means for providing a free-running second wave form at low first wave form frequencies;

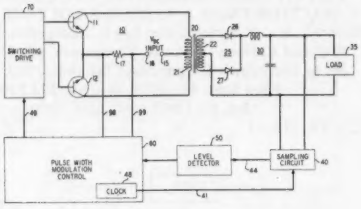
and means for synchronizing the first and second wave forms in a substantial number of integral frequency ratios at frequencies above said low first wave form frequencies.

3,859,586

OVERCURRENT PROTECTION CIRCUIT UTILIZING PEAK DETECTION CIRCUIT WITH VARIABLE DYNAMIC RESPONSE

James Carroll Wadlington, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 26, 1973, Ser. No. 400,785
Int. Cl. H02m *3/32*
U.S. Cl. 321—18 **7 Claims**



1. In a converter circuit,

voltage regulation means comprising means to generate voltage regulation signals proportional to the deviation of the output voltage of the converter from a regulated value,

means to monitor a current magnitude of said converter circuit and generate proportional voltage signals therefrom, an overcurrent limit protection circuit responding to said proportional voltage signals above an established threshold value and having a response speed dependent upon the magnitude of the voltage signals comprising, a comparator circuit, means to apply said proportional voltage signals to said comparator circuit, a source of reference voltage to establish said threshold value and being coupled to said comparator circuit, said comparator circuit being activated in response to said proportional voltage sigals exceeding said established threshold value, a first charge storage capacitor, means to charge said first charge storage capacitor, means to discharge said first charge storage capacitor through said comparator when said comparator is activated, and means responsive to said first charge storage capacitor to generate current limit control signals, said means to generate current limit control signals being coupled to said means to generate voltage regulation signals and being utilized to modify said voltage regulation signals to limit said converter current.

3,859,587

THYRISTOR PROTECTION CIRCUIT FOR INVERTERS

Harold J. Brown, Lorain, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Jan. 7, 1974, Ser. No. 431,359
Int. Cl. H02m *7/52*
U.S. Cl. 321—45 C **12 Claims**

1. In an inverter, in combination:

a positive bus;

a negative bus;

an a-c bus;

first switching means for controlling the flow of current between the positive bus and the a-c bus;

second switching means for controlling the flow of current between the a-c bus and the negative bus;

means for alternately energizing the first and second switching means;

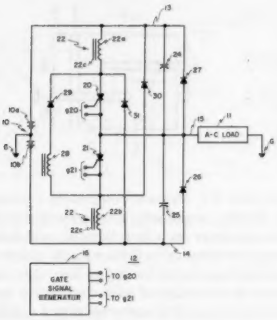
a commutating inductor having first and second coupled windings;

means for connecting the first switching means to the positive bus through the first winding of the commutating inductor and to the a-c bus;

means for connecting the second switching means to the negative bus through the second winding of the commutating inductor and to the a-c bus.

first and second capacitors;

means for connecting the first capacitor between the positive bus and the a-c bus;



means for connecting the second capacitor between the negative bus and the a-c bus;

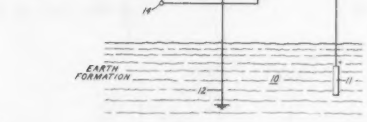
means for limiting the reverse voltages across the first and second switching means to voltages approximately equal to the voltages across the first and second capacitors; and means for connecting the limiting means to the negative bus, to the first switching means, to the positive bus and to the second switching means.

3,859,588

REVERSE CURRENT PROTECTIVE MEANS FOR RECTIFIER OUTPUT CIRCUITS

Charles H. Titus, Newtown Square, Pa., assignor to Electro-Petroleum Inc., Bryn Mawr, Pa.

Filed Feb. 17, 1971, Ser. No. 116,035
Int. Cl. H01b *7/28*
U.S. Cl. 321—47 **5 Claims**



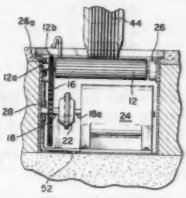
1. In combination, a direct current load circuit having a pair of input terminals and including two electrodes spaced apart in an environment including an electrolytically conductive fluid, the space between said electrodes being subject to local generation of low inverse potentials and said electrodes being subject to reverse current resulting therefrom, a power rectifier having high voltage direct current output terminals connected to said load circuit input terminals, switching means for disabling said power rectifier without disconnecting said input terminals from said load circuit, and means for maintaining a low unidirectional voltage of normal polarity across said input terminals when said power rectifier is disabled comprising a low voltage battery and a unilateral conducting device fixedly connected in series circuit relation across said input terminals in opposing voltage relation to the high voltage supplied through said power rectifier.

3,859,589

ELECTRIC GENERATION APPARATUS

Charles G. Rush, 26 Bouline St., Beachwood, N.J. 08722

Filed June 5, 1973, Ser. No. 367,283
Int. Cl. H02p *9/06*
U.S. Cl. 322—40 **3 Claims**



1. Electric generation apparatus for providing emergency power to a house and the like upon failure of a utility line wherein the prime mover is an automobile wheel comprising:

a housing for disposal below the ground and having a removable cover at ground level for exposing its contents;

two splined rollers spaced-apart parallel and pivotally disposed in said housing adjacent to the ground level for receiving the wheel of an automobile;

a pair of sprockets each secured to and driven by each of said rollers;

a third sprocket pivotably mounted within said housing in the same plane as said pair of sprockets;

an endless roller chain engaging the periphery of said sprocket pair and said third sprocket;

a shaft driven by said third sprocket;

an electric generator disposed in said housing;

a slip clutch coupling said generator to the output shaft of said third sprocket so that when said sprocket causes the input of said slip clutch to exceed the predetermined rate, the output of said slip clutch provides a constant input to said electric generator; and,

an automatic switch having a solenoid coupled to the output of said generator so that when the voltage of said generator reaches a predetermined level, said solenoid will trip so as to apply the output of said generator to the house while simultaneously electrically isolating the house from the utility lines.

3,859,590

WAVEFORM AVERAGING RC CIRCUIT

John Robert Cielo; William Albert Moorman, and Suryanarayana Krishnappa Rao, all of Kingston, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 30, 1973, Ser. No. 383,741
Int. Cl. G05f *1/56*
U.S. Cl. 323—17 **10 Claims**

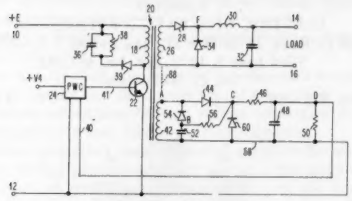
1. In a transformer coupled transistor switching regulator having a plurality of output circuits including at least one rectified load circuit having an inductor-capacitor averaging filter and a feedback sense circuit for control of switching transistor means of said transistor switching regulator,

the improvement comprising,

said sense circuit comprising a half-wave rectifier and

a resistor-capacitor filter comprising a filter resistor having a first terminal connected to receive energy through said rectifier when said switching transistor means is conducive and a second terminal, said resistor being coupled by said terminals in series with the output circuit of said resistor-capacitor filter.

a capacitor coupled to said second terminal of said resistor, said capacitor being connected in parallel with said output circuit of said filter,



and means operative when said switching transistor means is nonconductive to apply a datum potential in circuit with said first terminal of said resistor, said datum potential corresponding to the volt-time average of the full-wave signal applied to said rectifier.

3,859,591

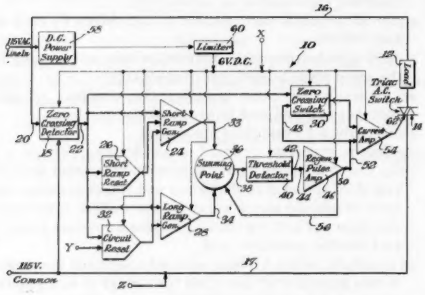
SOFT TURN-ON POWER SWITCHING CIRCUIT

Norman B. Saunders, Weston, Mass., assignor to Display Enterprises, Inc., Rockland, Del.

Filed July 2, 1973, Ser. No. 375,550

Int. Cl. G05f 1/44

U.S. Cl. 323—18 **19 Claims**



1. A power switching circuit for controlling the application of an AC power source to a load through a thyristor turned on by actuating signals applied to its gate comprising a zero-crossing detector having an input connected to said AC power source for generating a zero-crossing signal each time the AC wave passes through zero, a short ramp generator and a short ramp reset for generating a sawtooth voltage wave in response to each zero-crossing signal, a long ramp generator for generating a ramp-shaped voltage wave which grows in response to each successive zero-crossing signal, the outputs of said generators being connected to a summer which adds them into a composite ramp wave, a threshold detector connected to said summer for determining when said composite wave rises above predetermined threshold level whereby a turn-on signal is generated, said threshold detector being connected to said gate for turning on said thyristor at earlier times during each successive AC half-cycle wave, a zero-crossing switch connected between said zero-crossing detector and said gate for applying said zero-crossing signal directly to said gate, said threshold detector being connected to said zero-crossing switch for enabling it to be turned on after said composite ramp wave is completely above said predetermined threshold level whereby said zero-crossing signal is bypassed from said short ramp generator and said short ramp reset and said long ramp generator and directed through said zero-crossing switch into said gate for causing said thyristor to apply all of said AC power to said load.

3,859,592

ELECTRICAL RC ELEMENT

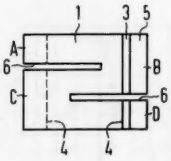
Hartmut Kessler, Regensburg, Germany, assignor to Siemans Aktiengesellschaft, Berlin & Munich, Germany

Filed May 3, 1973, Ser. No. 357,008

Claims priority, application Germany, May 8, 1972, 2222546

Int. Cl. H01g 1/16

U.S. Cl. 323—78 **17 Claims**



1. An electrical RC element comprising a plurality of insulating foils, at least two of which are provided with an electrically conductive layer on a face thereof, said foils and layers being arranged alternately to form a stack, at least one pair of adjacent conductive layers having at least one insulating foil therebetween, at least one of said conductive layers being a high-resistance layer and at least one of said conductive layers being a low-resistance layer, with only one conductive layer being disposed on a respective foil, and alternate conductive layers staggered with respect to one another, said stack having at least one transverse incision therein extending from one end face of the stack in all layers and foils thereof, and at least said conductive layer of high resistance being positioned for end contact with an external current source.

3,859,593

DETECTION OF BREAKS IN FLEXIBLE ELONGATE MEMBERS

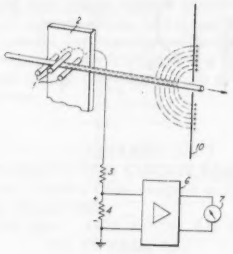
John Huyton Poole, 14 Daresbury Rd., and Brian Anthony Goodison, 5 Hard Ln., both of St. Helens, England

Filed June 27, 1973, Ser. No. 374,023

Claims priority, application Great Britain, June 28, 1972, 30284/72

Int. Cl. G01r 29/12, 31/12

U.S. Cl. 324—32 **7 Claims**



1. A method of detecting breaks in a flexible elongate member whose surface is of an insulating material capable of generating an electrostatic charge by friction with another surface comprising causing the member to travel in the direction of its length past and in continuous contact with at least one electrode which is connected to a charge sink, said electrode being conductive and of a material chosen to cause electrons to be transferred continuously in one direction between said electrode and the surface of said member and to flow between the said charge sink and said electrode, and continuously monitoring the current flowing between said electrode and said charge sink to observe whether it falls below a predetermined value.

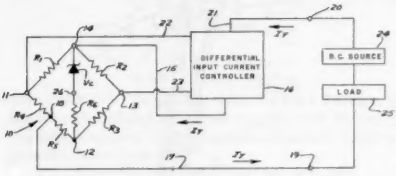
3,859,594
TWO WIRE CURRENT TRANSMITTER RESPONSIVE TO A RESISTANCE SENSOR INPUT SIGNAL

Earl A. Grindheim, Minneapolis, Minn., assignor to Rosemount Inc., Minneapolis, Minn.

Continuation of Ser. No. 661,988, Aug. 21, 1967, abandoned. This application Feb. 24, 1970, Ser. No. 14,748

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **23 Claims**



1. A measuring system comprising a pair of terminals, a source of direct current and a load, means to connect the source and load in series between said current terminals, means to provide a variable voltage signal which varies in magnitude as a function of a variable condition to be measured, a current adjusting controller means having a voltage responsive input coupled to said variable voltage means for receiving said variable voltage signal and adjusting the current through said terminals as a function of the magnitude of the variable voltage signal at said input, said controller means being connected across said terminals and energized solely from current supplied through said terminals, resistance means connected to said current terminals to provide a voltage feedback which is a function of total current flowing through said terminals, and means connecting said resistance means to said input of said controller means to provide the feedback voltage as determined by the current through said resistance means to tend to balance a change in the variable voltage signal at said input occurring due to a change in magnitude of said variable condition and to stabilize the adjusted current through said terminals at a new magnitude which is representative of a change in magnitude of said variable condition.

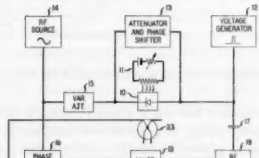
3,859,595
METHOD FOR MEASURING TRAPS IN SEMICONDUCTORS

David Vern Lang, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 6, 1973, Ser. No. 422,182

Int. Cl. G01r *31/26*

U.S. Cl. 324—158 D **10 Claims**



1. A method for testing a semiconductor body containing a P-N junction which comprises the steps of:

a. maintaining the P-N junction under a reverse bias voltage at a first temperature through steps (b) through (d);

b. applying a voltage pulse across the P-N junction in the body superimposed on the reversed bias voltage;

c. developing a first signal proportional to the transient RF capacitance of the junction in the body during a first predetermined time interval after cessation of the pulse;

d. developing a second signal proportional to the transient RF capacitance of the junction in the body during a second predetermined time interval after cessation of the pulse; and

e. developing a third signal proportional to the difference between the first and second signals.

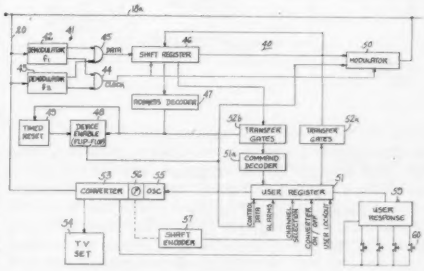
3,859,596
CABLE TELEVISION TWO-WAY COMMUNICATION SYSTEM

George E. Jannery, Ridgefield, Conn., and Mark P. Messinger, New York, N.Y., assignors to Computer Cable Corporation, Ridgefield, Conn.

Filed Nov. 24, 1972, Ser. No. 309,077

Int. Cl. H04n *7/16*

U.S. Cl. 325—31 **18 Claims**



1. A two-way communications system including a central station and a plurality of remote stations coupled to a coaxial cable with said remote stations arranged to be polled by the central station, first means at said central station for transmitting polling signals in a first frequency encoded logic bit form over the cable to said remote stations, each polling signal including an address code-word peculiar to one remote station, each of said remote stations comprising a shift register, means for demodulating the frequency encoded signal and applying the demodulated signal serially to said register, a return message register for storing information in logic bit form indicative of a condition at the remote station, means coupled to said shift register for identifying the address of a demodulated signal therein, means responsive to said identifying means for transferring data in said return message register to said shift register, second transmitting means for serially frequency encoding the data in said shift register at a second frequency, and means for shifting data in said shift register to said second transmitter, the output of said second transmitter being coupled to the cable.

3,859,597
SYSTEM FOR THE TRANSMISSION OF SIGNALS BY PULSE CODE MODULATION

Piet Zwaal, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 1, 1973, Ser. No. 366,058

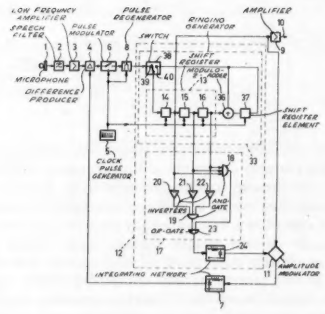
Claims priority, application Netherlands, June 24, 1972, 7208730

Int. Cl. H03k *13/22*

U.S. Cl. 325—38 B **4 Claims**

1. A system for the transmission in a given transmission band, continuously varying information signals by means of companded delta modulation, said system being of the type comprising a transmitter and a receiver, the transmitter comprising a delta modulation and a receiver, the transmitter

comprising a delta modulation compressor; a ringing generator for generating a ringing signal having a frequency within said transmission band, being transmitted to said receiver; a clock pulse generator, a pulse code modulator connected to said clock pulse generator for producing output pulses, means for transmitting the output pulses to the cooperating receiver and which are also applied to a local receiver provided with an integrating network, said network producing a comparison signal; a difference producer, said comparison signal and said information signal being applied thereto, said difference producer producing a difference signal controlling the pulse code modulator; said receiver comprising a deltamodulation expander, a pulse pattern analyzer and a ringing signal detector, said deltamodulation compressor and said expander each comprising a dynamic control device which is controlled by a dynamic control voltage generated by said pulse pattern analyzer, said pulse pattern analyzer being provided with a shift register coupled to the output of the pulse code modulator and comprising at least three shift register elements whose contents is shifted in synchronism with the pulses originating from the clock pulse generator, the improvement wherein the ringing signal generator in the transmitter comprises a pulse pattern



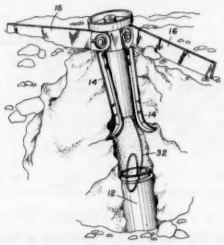
generator controlled by said clock pulse generator for generating a periodic pulse pattern within which the pulses assume a first and a second of two binary values, occur in an irregular alternation and coincide with the successive pulses generated by the clock pulse generator, said pulse pattern generator being constituted by a cascade arrangement of at least one modulo-2-adder and at least one additional shift register element connected to the output of one of the shift register elements of the shift register associated with said pulse pattern analyzer in the transmitter, a switching device having a shift register input terminal coupled to the output of the pulse code modulator and a pulse pattern generator input terminal connected to the output of the cascade arrangement, the input of said pulse pattern generator being connected to said switching device said output of the cascade arrangement being likewise connected to a second input of the modulo-2-adder, the pulses to be transmitted in said transmitter being derived from one of the shift register elements associated with both the said shift register of said pulse pattern analyzer and with said pulse pattern generator, the transmitted signals in the reciever of said transmission system being applied to the ringing signal detector which generates a series of pulses in accordance with the received ringing signal.

3,859,598

AERIAL DROP PENETRATION DEVICE

Jack W. McElwain, and Alvis D. Stephenson, Jr., both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 9, 1969, Ser. No. 815,524
Int. Cl. E02f *5/20*; G01s *1/72*; G01v *1/16*
U.S. Cl. 340—15.5 **16 Claims**



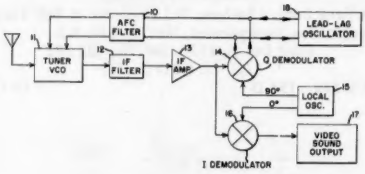
1. A separable two-part aerial drop probe comprising:
a first section including a plurality of brake members attached to the exterior of the first section, said brake members each having a surface medium engagement portion for engaging the surface medium to bring the brake members into engagement with the surface medium for braking said section to a stop such that said first section remains partially above the surface,
a second section separably mating with said first section, and
releasable coupling means joining said section as a single unit operatively responsive to the brake action to release said sections from each other upon engagement of said brake members with said surface medium thereby permitting said second section to be buried below the surface.

3,859,599

SIGNAL ACQUISITION NETWORK FOR SIGNAL RECEPTION

William Peil, North Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,914
Int. Cl. H03d *3/14*
U.S. Cl. 325—419 **11 Claims**



1. A signal acquisition network for use in a reception system comprising:
a. a first oscillator having a predetermined latent forward gain and oscillating at a given low frequency,
b. an automatic phase/frequency control network comprising:
1. a second, voltage controlled oscillator
2. means coupling the output of said first oscillator to said second oscillator to cause the frequency of the latter to swing over a range exceeding the lock-in range of said control network for signal acquisition, and
3. a detector to the input of which a signal being acquired is applied and whose output is coupled to said first and said second oscillators, said detector developing an error signal to maintain said second oscillator and said

signal in proper phase relationship for demodulation once lock-in has occurred, and said detector

quenching said first oscillator once lock-in has occurred by coupling thereto demodulated oscillations of said first oscillator in degenerative phase,

said control network, when said signal exceeds a minimum low level, exhibiting a gain at said first oscillator frequency at the detector output in excess of said latent forward gain.

3,859,600

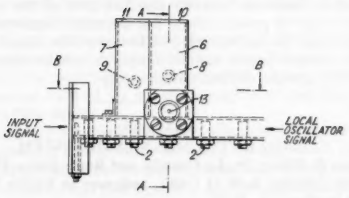
WAVEGUIDE MIXER

George Frederick Craven; Raymond Richard Thomas, both of Harlow, and Maurice Francis Berger, Old Harlow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,487

Int. Cl. H03d *7/18*

U.S. Cl. 325—445 **12 Claims**



1. A waveguide mixer arrangement comprising:

a first waveguide, one end of which receives an input signal having a first given frequency and the other end of which receives a local oscillator signal having a second given frequency different than said first given frequency;

a first resonant slot disposed in one wall of said first waveguide intermediate the ends thereof;

said first waveguide including

a first evanescent mode waveguide filter to couple said input signal to said first resonant slot, and

a second evanescent mode waveguide filter to couple said local oscillator signal to said first resonant slot;

a second waveguide coupled at right angles to said first waveguide encompassing said first resonant slot, said second waveguide being dimensioned to be evanescent at the mixer generated image frequency and propagating at the mixer generated sum frequency;

a mixer diode disposed in said second waveguide adjacent to said first resonant slot;

a capacitive obstacle disposed in said second waveguide a first given distance from said first resonant slot to provide within said second waveguide an evanescent mode resonator tuned to said image frequency so as to effect reactive termination of said image frequency; and

a short circuit plate disposed in said second waveguide a second given distance greater than said first given distance from said first resonant slot to effect reactive termination of said sum frequency.

3,859,601

SIGNAL HANDLING ARRANGEMENT AND FREQUENCY DIVERSITY COMBINING ARRANGEMENTS UTILISING THE SAME

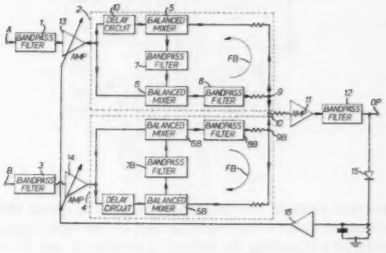
Anthony Thomas Curtis, Essex, England, assignor to The Marconi Company Limited, Chelmsford, Essex, England

Filed Apr. 11, 1973, Ser. No. 350,094

Claims priority, application Great Britain, Apr. 11, 1972, 16738/72

Int. Cl. H04b *7/02*

U.S. Cl. 325—305 **6 Claims**



1. A signal handling arrangement suitable for use in a frequency diversity predetection combining arrangement comprising two balanced mixers, means for applying input signals in parallel to both mixers, means for deriving a second input for one of said mixers from the output of the other via band pass filter means adapted to pass signals in one of the sidebands of the output from said other mixer, further band pass filter means connected to apply output from said one mixer as a second input for said other mixer, and output means for taking output signals from the output of said first mentioned band pass filter means wherein said further band pass filter means is capable of tracking in response to the frequency of input signals applied thereto over a range of frequencies so as to maintain passage of signals in the sideband of the output from said one mixer which corresponds to said one sideband of the output of said other mixer and comprises a phase locked loop circuit connected to apply output from said one mixer as a second input to said other mixer and as one input to a further balanced mixer, a second input for which is derived via a 90° phase shifter from the output of said one balanced mixer, means being provided for utilising output from said further balanced mixer to control the attenuation provided by a linearly variable attenuator connected in the path between said first mentioned band pass filter means and both said one mixer and said output means.

3,859,602

DEVICE FOR SIMULATING THE ORIGINAL SHAPE OF A SIGNAL WHICH IS DISTORTED BY PEAKS

Frits Jacques Janssen, Waalre, and Arnold Lehmann, Emmasingel, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,050

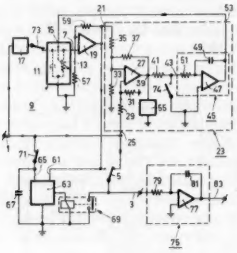
Claims priority, application Netherlands, Mar. 16, 1972, 723463

Int. Cl. H03b *1/00*; **H03k** *5/00*; **H04b** *1/10*

U.S. Cl. 328—162 **8 Claims**

1. A device for simulating the shape of an input signal which includes a peak followed by a decaying part, at least the first portion of said decaying part decreasing exponentially and a subsequent portion of said decaying part being distorted, said device comprising a first switching member, a signal generator adapted to generate an exponentially decreasing signal that simulates the decaying part of the input signal without the distorted portion, means for selectively connecting an outgoing conductor via said first switching member to an incoming

conductor which serves to supply the input signal and to the output of said signal generator, said signal generator comprising a capacitor which can be discharged via a resistance element, a second periodically operating switching member for connecting said capacitor to the incoming conductor, means for adjusting the time constant of the network formed by the



resistance element and the capacitor so as to match this time constant to that of the decaying part of the input signal, and means for connecting the incoming conductor and the output of the signal generator to first and second inputs, respectively, of a measuring member which derives a difference signal determined by the difference between the amplitudes of the signal generated by the signal generator and the input signal.

3,859,603

TRIANGULAR GENERATOR

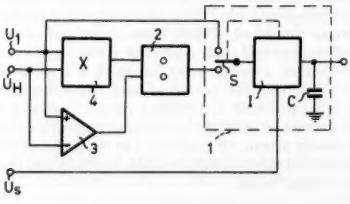
Karl Heinz Herzner, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 27, 1973, Ser. No. 373,946

Claims priority, application Germany, Oct. 6, 1972, 2249082

Int. Cl. H03k *17/00*

U.S. Cl. 328—181 **10 Claims**



1. A circuit arrangement for generating a controllable triangular voltage comprising, a capacitor, a voltage-controlled current generator having an output which feeds a current proportional to a voltage appearing at a control input of said current generator into said capacitor across which the triangular voltage is developed, a switching device for alternately connecting the control input of the current generator to either of two control voltages which cause opposite currents to flow at the output of the current generator, the switching device being switched over each time that the output voltage exceeds a voltage range defined by first and second voltage levels, first means for applying the first control voltage for the current generator to one input of a first multiplier circuit and to the non-inverting input of a differential amplifier, second means for applying a first auxiliary voltage to the other input of the first multiplier circuit and to the inverting input of the differential amplifier, means for connecting the output of the first multiplier circuit to the dividend input and the output of the differential amplifier to the divisor input of a first dividing circuit which derives at its output the second control voltage for the current generator.

3,859,604

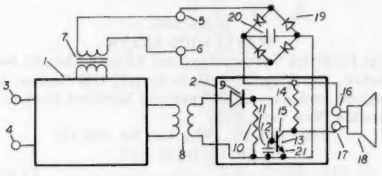
ISOLATED AMPLIFIER

John Charles Rankin, 908 S. Hobart Blvd., Los Angeles, Calif. 90006

Filed July 26, 1972, Ser. No. 275,438

Int. Cl. H03f *3/38*

U.S. Cl. 330—10 **2 Claims**



1. A transistor audio frequency amplifier with two power supplies in which the audio frequency signal to be amplified is used to modulate a radio frequency oscillator the signal being transferred from the first part of the amplifier to the second part of the amplifier by a radio frequency transformer where said audio frequency signal is recovered by demodulation and amplified with said radio frequency transformer providing isolation between the first part of the amplifier which receives power from a line operated transformer type supply and the second part of the amplifier which obtains direct current power for the output transistors from a line operated transformerless power supply.

3,859,605

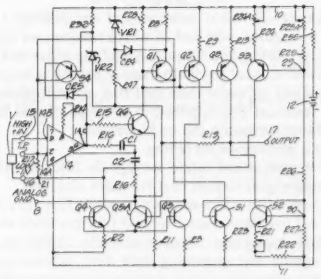
AMPLIFYING MEANS AND SYSTEM

Eugene B. Hibbs, Jr., La Canada, and Roger Swire, IV, Lakeview Terrace, both of Calif., assignors to Digilin Incorporated, Glendale, Calif.

Filed Mar. 26, 1973, Ser. No. 345,062

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 R **11 Claims**



1. In an amplifying system, an amplifier having a first input terminal and a second input terminal and an output terminal; a first amplifying device having a first control element for controlling current flow through said first device;

a second device serving as a current sink;

a third amplifying device having a control element for controlling current flow through said third device;

a fourth device serving as a current sink;

a fifth amplifying device having a pair of electrodes connected between terminals of said source; said fifth device having a control element for controlling current flow between said electrodes;

a source of current having two terminals;
an impedance;
a first series circuit including said first device, said impedance and said second device with a first junction point between said first device and one terminal of said impedance, and with a second junction point between said other terminal of said impedance and said second device;
signal input terminals including a first signal terminal and a second signal terminal;
said first input terminal being connected to said first signal terminal;
said second input terminal being connected to said first junction point;
said second signal terminal being connected to said second junction point;
a second series circuit including said third device and said fourth device; a first load resistor;
said first series circuit being connected in series with said first load resistor and said source terminals to receive current from said source;
a second load resistor;
said second series circuit being connected in series with said second load resistor and to said source terminals to receive current from said source;
said fifth device being connected to said source terminals to receive current from said source;
a sixth amplifying device having a pair of electrodes connected between terminals of such source; said sixth device having a control element for controlling the current flow between said electrodes of said sixth device;
said control element of said sixth device being connected to said amplifier output terminal;
one of said electrodes of said sixth device being connected to one of said source terminals and the other of said (output) electrodes being connected to the control element of each of the control elements of said first, third and fifth devices;
and positive feedback means in which said sixth device is connected in a positive feedback circuit which extends from said amplifier output terminal and through said sixth device, and said first device to said second input terminal in that order; an output terminal; and one of the electrodes of said fifth device being connected to said output terminal.

3,859,606
RECEIVER HAVING PREAMPLIFIER AND MULTICOUPLER

Eugene A. Peterson, Penfield, N.Y., assignor to Edmac Associates Inc., Rochester, N.Y.

Continuation of Ser. No. 191,199, Oct. 21, 1971, abandoned. This application July 19, 1973, Ser. No. 380,687
Int. Cl. H03f *3/60*
U.S. Cl. 330—53 **1 Claim**

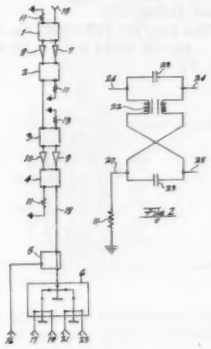
1. For use in a sonobuoy receiver system responsive to an input VHF signal from an antenna or the like, the combination comprising:

a. a preamplifier including:

i. a first amplifier stage having first and second amplifiers each including one input and one output terminal respectively and first and second 90° couplers with said first coupler being connected to the input terminal of said first and second amplifiers respectively, the input of said first coupler being connected to said antenna, and said second coupler being connected to the output terminal of said first and second amplifiers respectively,

ii. a second circuit state cascaded to said first circuit stage and having third and fourth amplifiers each including one input and one output terminal respectively and third and fourth 90° couplers with said third coupler being connected to the input terminal of said third and fourth amplifiers respectively, the input of said third coupler being connected to the output of said second coupler, and said fourth coupler being connected to the output terminal of said third and fourth amplifiers resepctively, and;

iii. said first, second, third and fourth couplers each including a transformer having primary and secondary windings and first and second capacitors, said first capacitor being connected to one side of the primary



and secondary windings of said transformer, and said second capacitor being connected to the other side of said primary and secondary windings of said transformer;

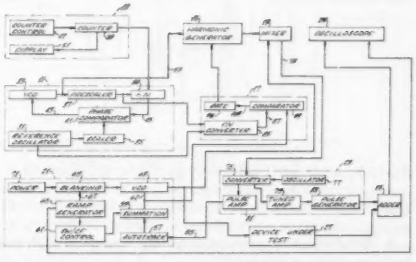
b. a directional coupler coupled to said fourth coupler for producing two signals; and

c. a reactive hybrid divider responsive to the first of said two signals produced by said directional coupler for providing a further plurality of output signals.

3,859,607
SWEEP GENERATOR WITH CRYSTAL CONTROLLED CENTER FREQUENCY

Bruce H. Brazelton, Laguna Niguel, Calif., assignor to Telonic Industries, Inc., Laguna Beach, Calif.

Filed June 4, 1973, Ser. No. 366,759
Int. Cl. H03b *23/00*; **H03k** *3/00*
U.S. Cl. 331—178 **23 Claims**

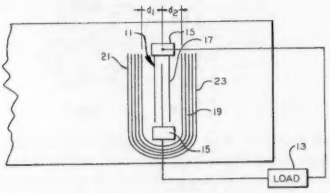


21. A digitally controlled oscillator, comprising:

a cyclic frequency generator for repetitively producing an output signal which sweeps through frequencies between a predetermined minimum and maximum frequency, said frequency generator additionally producing a ramp signal having an instantaneous amplitude which is proportional to the instantaneous frequency of said output signal;

a frequency signal source;
means for selectively enabling said frequency source in response to the instantaneous amplitude of said ramp signal; and
means for heterodyning the output of said frequency signal source with said output signal.

3,859,608
REFLECTIONLESS SURFACE WAVE TRANSDUCER
Clinton S. Hartmann, Dallas, Tex., and Michael J. Birch, Northampton, England, assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 28, 1973, Ser. No. 429,258
Int. Cl. H03h *9/02, 9/26, 9/32*
U.S. Cl. 333—72 **5 Claims**

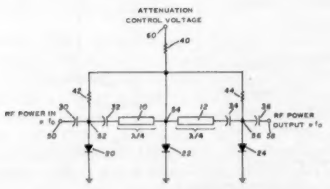


1. A surface wave device comprising: a piezoelectric substrate; a multi-strip coupler disposed on said substrate, said coupler including a pair of spaced apart substantially parallel arms connected together at one end thereof by an integral bight portion, an interdigital transducer disposed in the space between said arms of said coupler with a preselected off-set from the center of said space, the position of said interdigital transducer being selected to satisfy the equation:

$$\alpha e^{j\Delta d} = \sqrt{1-\rho^2}$$

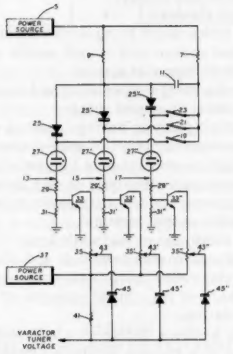
where ρ is the ratio of the acoustic transmission coefficient to the acoustic reflection coefficient, α is the coupling efficiency of the multi-strip coupler, and Δd is the off-set of the interdigital transducer from the center of the space between said arms of the coupler.

3,859,609
ABSORPTIVE PIN ATTENUATORS
James B. Couvillon, Dallas, and Roy E. Shipley, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed July 23, 1973, Ser. No. 381,948
Int. Cl. H01p *1/22*
U.S. Cl. 333—81 A **8 Claims**



1. An absorptive attenuator for RF signals in matched impedance systems comprising:
a plurality of transmission line segments, each having a length of one quarter wavelength at a preselected operating center frequency, said segments coupled between an RF input terminal and an RF output terminal for conducting RF energy from the RF input to the RF output,
a plurality of PIN diodes coupled in shunt to the RF input and RF output terminals and junctions of transmission line segments for selectively absorbing part of the RF energy conducted by said transmission line segments, and a bias network for supplying unequal bias currents to said diodes to maintain the RF impedance of said diodes coupled to the RF input and RF output terminals at a value substantially equal to that of said diodes coupled to a common junction of transmission line segments plus the transmission line characteristic impedance over an operating range of attenuation levels.

3,859,610
SIGNAL CHANNEL ADDRESS SYSTEM
Dong Woo Rhee, Williamsville, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.
Filed Feb. 25, 1974, Ser. No. 445,796
Int. Cl. H03j *5/22;* **H03k** *1/14*
U.S. Cl. 334—15 **8 Claims**

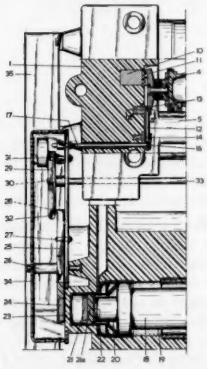


1. In a signal receiver having first and second potential sources and a varactor tuner, a signal channel address system comprising:
charge storage means coupled by first and second impedances to said first potential source;
a plurality of parallel coupled channel indicating and tuning means each coupled to said charge storage means and second impedance and to said second potential source and varactor tuner; and
a plurality of switching means each coupled to said charge storage means and first impedance and to one of said plurality of parallel coupled channel indicating and tuning means whereby activation of one of said switching means causes energization of a selected one of said parallel coupled channel indicating and tuning means and de-energization of the remainder of said parallel coupled channel indicating and tuning means.

3,859,611
ELECTRIC SWITCHING APPARATUS
Jan Christiaan Clason, Hengelo, Netherlands, assignor to Hazemeijer B. V., Hengelo, Netherlands
Filed Oct. 26, 1973, Ser. No. 410,025
Claims priority, application Netherlands, Oct. 30, 1972, 72.14678
Int. Cl. H01h *73/48*
U.S. Cl. 335—142 **5 Claims**

1. An electric switching apparatus, comprising:
a stationary member and a movable member;
an energy accumulator for switching the apparatus on or off by movement of said movable member to and from said stationary member, and including at least one switching-off spring;

magnetic locking means mounted between said movable member and said stationary member and including magnetic operating means and a ferro-magnetic armature plate retained by said magnetic operating means in the switched-on state of said switching apparatus, thereby locking said switching apparatus in the switched-on state; said switching-off spring is cocked in the switching-on state and is released with the uncoupling of said magnetic locking means;

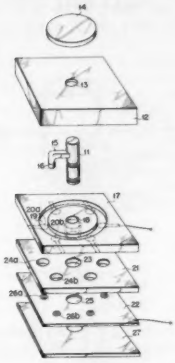


said magnetic locking means including a disconnecting mechanism for disengaging the coupling between said magnetic armature plate and said magnetic operating means to switch-off said switching apparatus through said energy accumulator; and

said disconnecting mechanism includes a D-shaft having a flattened portion positioned in the interface between said armature plate and said magnetic operating means with said switching apparatus in the on state, said D-shaft rotating to uncouple said armature plate from said magnetic operating means.

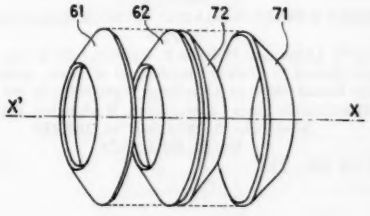
3,859,612
SWITCHING DEVICE
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Mar. 29, 1974, Ser. No. 456,437
Claims priority, application Japan, Apr. 3, 1973, 48-37985
Int. Cl. H01h *9/00*
U.S. Cl. 335—205 **4 Claims**

1. A switching device comprising an operating handle having a permanent magnet driven to describe a predetermined locus; a plurality of fixed contacts supported on a plate and in proximity to the locus of the permanent magnet with an insulating space left therebetween; and a plurality of movable contacts formed integral with a magnetic plate and disposed, through the first-mentioned plate, on a side opposite to the side on which the operating handle is disposed, said plurality of movable contacts correspondingly facing said plurality of fixed contacts, respectively, so that when any one of the fixed contacts is selected by operating the handle, the corresponding movable contact is attracted, under the magnetic attrac-



tion of the permanent magnet, into contact with the fixed contact.

3,859,613
FOCUSSING DEVICE FOR ELECTRONIC TUBES
Michel Blamoutier, and Jean Fraleux, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Jan. 22, 1974, Ser. No. 435,483
Claims priority, application France, Jan. 26, 1973, 73.02837
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **5 Claims**

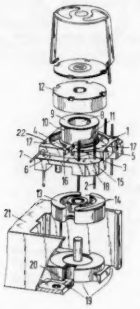


1. A focusing device for an electronic tube, through which when the device is in use, an electron beam is propagating, said device comprising a permanent magnet surrounding said tube in an annular fashion, in the direction of the propagation of said electron beam, said magnet being constituted by two coaxial half-stacks of rings, each of said rings being magnetized in a direction substantially normal to their faces, and being a thin, rectangular-section, frustoconical ring, each half-stack, being made up of a certain number of said rings, assembled together and in contact with each other through faces of opposite magnetic type, the two half-stacks being located opposite one another with their larger bases, their mutually opposite faces having opposite magnetic types.

3,859,614
ELECTRICAL COIL ASSEMBLY

Egon Reithmaier, Gauting, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 7, 1974, Ser. No. 449,011
Claims priority, application Germany, Mar. 7, 1973, 2311312
Int. Cl. H01f *15/02*
U.S. Cl. 336—83 **3 Claims**

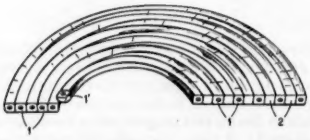


1. An electrical coil assembly having cup core coils comprising a winding drum having outwardly extending flanges formed at opposite ends thereof for restriction of a core member winding space wherein one of said flanges is relatively wider than the other and lies in a plane transverse to the axis of said drum and exceeds the circumference of the cup core coaxially positionable over the coil member and wherein said widened flange provides openings for said cup core and serves as a seat for connecting studs extending through the flange and lying in an axis parallel to the axis of said cup core, a pair of bridges interconnecting said widened flange and said drum and providing the only means for interconnecting the widened flange and said drum, wherein said cup core extends over said drum and through the spaces between said drum and said widened flange portion and wherein said interconnecting studs are displaceable in a direction transverse to the axis of said drum.

3,859,615
TORUS WINDINGS HAVING ASYMMETRIC MAGNET COILS

James N. Luton, Jr.; Wilhelm F. Gauster, both of Oak Ridge, and Robert L. Brown, Kingston, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 30, 1973, Ser. No. 383,858
Int. Cl. H01f *27/28*
U.S. Cl. 336—225 **7 Claims**



1. An improved magnetic field producing system for providing the toroidal fields of an experimental thermonuclear device, comprising a plurality of asymmetric coils arranged in the form of torus, each of said coils being provided with a winding cross section which has the turns thereof compact on the side nearest the torus main axis and adapted to carry a higher current density while in other areas said winding cross section is expanded in the outward directions, said other areas adapted to carry a lower current density.

3,859,616
TEMPERATURE CONTROL DEVICE

Shaul P. Ladany, 5700 Arlington Ave., Apt. 16J, Riverdale, Bronx, N.Y. 10471

Filed Nov. 1, 1973, Ser. No. 411,780
Int. Cl. H01h *37/02*
U.S. Cl. 337—300 **4 Claims**

1. A temperature control device comprising: a temperature-sensitive element which changes its shape in response to changes in temperature; a first electrical contact carried by said temperature-sensitive element and movable in a first plane during changes in shape of the temperature-sensitive element; a humidity-sensitive hygrometer coil adapted to wind and unwind during changes in humidity; the inner end of said hygrometer coil being fixed, and the outer end carrying an extension which is movable by the change in shape of the hygrometer coil arising from changes in humidity; and a second electrical contact carried by said extension of the hygrometer coil; said hygrometer coil and extension being substantially coplanar with said first plane in which the first electrical contact moves so that changes in shape of the hygrometer coil causes the second electrical contact also to move in said first plane of movement of the first electrical contact; the arrangement being such that a decrease in humidity causes the second electrical contact carried by the hygrometer coil to move towards the first electrical contact to effect engagement between the two at a lower temperature, and an increase in humidity causes the second electrical contact to move away from the first electrical contact to effect engagement between the two at a higher temperature.

3,859,617
TURNABLE, CONTACTLESS VARIABLE RESISTOR

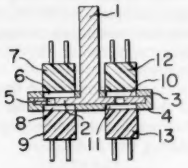
Shunzo Oka, and Shunji Minami, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka-fu, Japan

Filed Sept. 20, 1973, Ser. No. 399,150
Claims priority, application Japan, Sept. 26, 1972, 47-112689 [U]
Int. Cl. H01c *7/08*
U.S. Cl. 338—15 **5 Claims**

1. A turntable, contactless variable resistor comprising:
an opaque disk having a shaft that is rotatable about a given axis;
an opaque upper supporting plate having an opening therethrough for transmitting light and a bearing for the free turning of said disk about the shaft axis;
a light source fixed to the upper supporting plate and completely on one side thereof;
an opaque lower supporting plate having an opening therethrough for transmitting light from the light source disposed coaxially with the hole on said upper supporting plate;

a photoconductive cell fixed to the opening of said lower supporting plate and completely one one side thereof; and

said disk having an opening disposed between said upper and lower supporting plates at a radial position corresponding to the radial position of the openings in said supporting plates said supporting plates being joined as one body with said one side on the outside of said body, and the conducting resistance of said photoconductive cell varying by means of a changing amount of light passing through the openings by turning said rotatable shaft.



3,859,618

DEVICE FOR SIMULTANEOUSLY CONTROLLING A SET OF VARIABLE RESISTORS

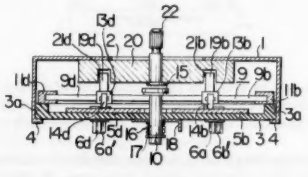
Matsuo Nishioka, and Shunzo Oka, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed Apr. 8, 1974, Ser. No. 459,045

Claims priority, application Japan, Apr. 9, 1973, 48-41049; Apr. 9, 1973, 48-43388; Apr. 9, 1973, 48-43389; Apr. 9, 1973, 48-43390

Int. Cl. H01l *9/02*

U.S. Cl. 338—128 **7 Claims**



1. A device for controlling a set of variable resistors comprising a casing having a top wall, a bottom wall and a peripheral wall, a plurality of resistive bodies provided on top of the bottom wall of said casing, a rotatable guide member extending within said casing and positioned above and parallel with said resistive bodies, said rotatable guide having the same number of guide arms as the number of said resistive bodies, a plurality of sliders each slidably mounted on the respective guide arms of said guide member and provided with respective brushes providing electric conduction between the associated resistive bodies and a conductive portion of said guide member, said sliders being provided with respective projections, an operable member having grooves receiving the respective projections of said sliders, and a drive means for driving said operable member.

3,859,619

VALVE OPERATION DETECTING DEVICE

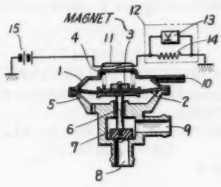
Shinya Ishihara, Anjo; Kiyohiko Mizuno, Nagoya, and Hiroaki Nishimura, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Showa-cho, Kariya-chi, Aichi-ken, Japan

Filed June 20, 1973, Ser. No. 371,881

Claims priority, application Japan, July 11, 1972, 47-82366; July 11, 1972, 47-82367; July 11, 1972, 47-82368

Int. Cl. G08b *21/00;* **F16k** *37/00*

U.S. Cl. 340—238 **2 Claims**



1. A valve operation detecting device for detecting the opening and closing operation of a valve wherein said valve includes:

a valve body,

a movable diaphragm connected to said valve body, and

a non-magnetic covering case enclosing said diaphragm,

the detecting device comprising

a reed switch removably mounted on said non-magnetic covering case,

a permanent magnet movable with respect to said reed switch in accordance with the movement of said diaphragm, and

indicating means connected to said reed switch for indicating the movement of said valve body in accordance with the opening and closing of said reed switch.

3,859,620

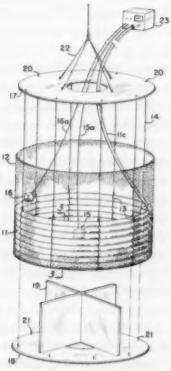
HYDROPHONE LINE ARRAY CALIBRATION UNIT

Joseph L. Percy, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 23, 1974, Ser. No. 435,912

Int. Cl. H04r *29/00*

U.S. Cl. 340—5 C **7 Claims**



1. An apparatus for permitting the calibration of an elongate hydrophone array comprising:

means for cylindrically supporting said elongate hydrophone array on its inner surface in a helically extending configuration;

means disposed adjacent said elongate hydrophone array for providing reference signals;

means coaxially mounted in the cylindrically supporting means for ensonifying the helically extending said elongate hydrophone array and the providing means with signals; and

means coupled to said helically extending said elongate hydrophone array for monitoring the ensonified signals and the reference signals to allow said calibration.

3,859,621

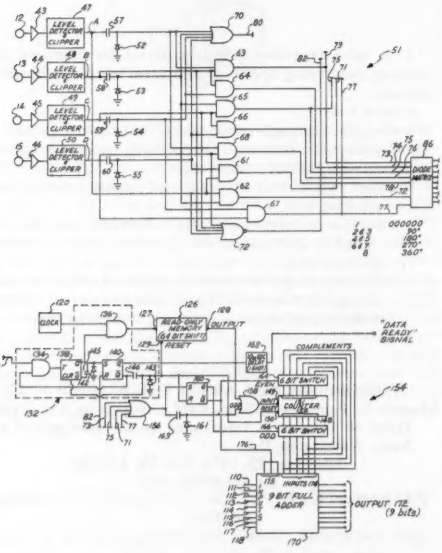
ACOUSTIC DIRECTION DETERMINATION SYSTEM

Donald S. Foreman, Fridley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 2, 1973, Ser. No. 412,135

Int. Cl. G01s *3/80*

U.S. Cl. 340—6 R **10 Claims**



1. A system for determining the direction in which an acoustic wave propagates through an acoustic medium comprising:

a plurality of transducers capable of producing electrical signals in response to the acoustic wave and arranged in a fixed pattern defining a closed curve having a center point through which a bearing line parallel to the direction of travel of the acoustic wave passes, the closed curve being divided by a predetermined number of radial base lines into arcuate segments, said plurality of transducers comprising a first transducer for producing a first electrical signal in response to the receipt of the acoustic wave at a first point in time and a second transducer for producing a second electrical signal in response to the receipt of the acoustic wave at a second point in time;

selection means for storing at least one base line digital number representing the angular position of each radial base line and responsive to the electrical signals from at least two of the transducers for transmitting a selected one of the base line digital numbers representing a selected one of the radial base lines adjacent the bearing line;

a clock pulse generator for generating clock pulses at a predetermined rate;

memory means responsive to the clock pulses for producing output pulses such that the sum of the pulses produced is proportional to the angle between the bearing line and the selected radial base line;

gate means for transmitting clock pulses to the memory means in response to the first electrical signal and for preventing clock pulses from being transmitted to the memory means in response to the second electrical signal;

counter means for counting and storing the output pulses from the memory means in the form of a correction digital number; and

computation means for combining the correction digital number and the selected base line digital number to produce a bearing digital number representing the bearing of the bearing line in degrees.

3,859,622

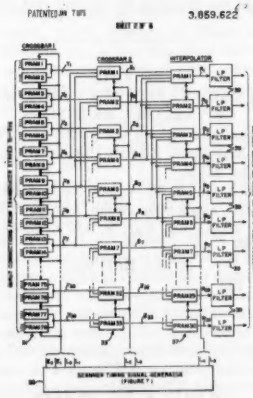
ELECTRONIC SCANNING SWITCH FOR SONAR

Milton H. Hutchison, Liverpool, and Joseph L. Petit, Meridian, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,784

Int. Cl. G01s *3/80*

U.S. Cl. 340—6 R **5 Claims**



1. For use in steering the beam formed by a sonar transducer which includes a plurality of transducer elements ordered in spaced array, electronic scanning switch means comprising:

a. a selector bank of switchable amplifiers each having as an input the received signal from one of said transducer array elements, said amplifiers being arranged in a plurality of groups with the amplifiers of each group connected to provide a common output;

b. an interpolator bank of switchable amplifiers each having as an input the output of one of said selector bank amplifier groups, said interpolator bank amplifiers being arranged in a plurality of groups with the amplifiers of each group connected to provide a common output;

c. scan control means providing a digital count signal representative of desired beam position;

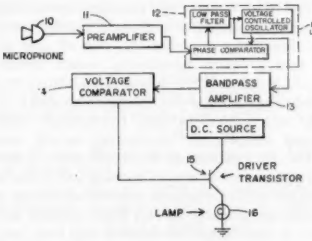
d. first scanning signal generating means responsive to said beam position signal to generate a coarse control signal and including means applying such coarse control signal to said selector bank amplifiers to cause the same to pass the received signal inputs from at least two adjacent array elements for positioning the beam formed thereby in discrete steps of magnitude determined by the spacing between array elements;

e. second scanning signal generating means including digital clock and clock counter means providing a clock count which recycles continuously and with periodicity defining an interpolation period, comparator means connected to compare said beam position digital count signal against said digital clock count and to produce a fine control signal each time correspondence therebetween is found, and means applying said fine control signal to said interpolator bank amplifiers for switching the same at a point during each interpolation period such that the output of each amplifier group represents an interpolation of the array element inputs passed therethrough during that period, to thus provide fine control of beam position between adjacent coarse positions.

3,859,623
EMERGENCY SIGNAL WARNING SYSTEM

Lyle E. Koehler, New Brighton, Minn., assignor to Ronald Jerome Goldman, St. Paul, Minn.

Filed Jan. 10, 1973, Ser. No. 322,281
Int. Cl. G08g 1/00
U.S. Cl. 340—34 **2 Claims**



1. Apparatus for giving a warning indication of a siren which produces an audio frequency signal which changes in frequency between F1 hz. and F2 hz. at the rate of about F3 times per minute comprising, in combination:

a. a transducer for picking up the siren signal and changing it to electrical signals;

b. amplification means tuned to amplify signals from said transducer which are within the F1 to F2 frequency range;

c. a phase-locked-loop circuit consisting of electrical circuit means for producing electrical signal oscillations within the frequency range of F1 to F2 and additional electrical circuit means for comparing the signal from said amplification means to the signal produced by said oscillation means and for producing an error signal to change the frequency of the latter to substantial agreement with the former;

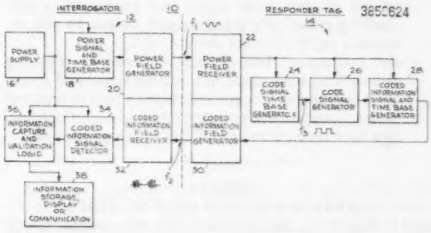
d. band-pass amplification means coupled to said additional electrical circuit means for producing an electrical signal output of a predetermined level only when the frequency of the said error signal is about F3; and

e. means coupled to the output of said band-pass amplification means for producing a warning signal when the output is at least said predetermined level.

3,859,624
INDUCTIVELY COUPLED TRANSMITTER-RESPONDER ARRANGEMENT

Thomas A. Kriofsky, 7341 Padova Dr., Goleta, Calif. 93017, and Leon M. Kaplan, 1121 E. Cabrillo Blvd., Santa Barbara, Calif. 93103

Filed Sept. 5, 1972, Ser. No. 286,306
Int. Cl. G08g 1/00; G01s 9/56
U.S. Cl. 340—38 L **19 Claims**



1. An interrogator-responder system for providing an output signal having an information content corresponding to an uniquely coded information field of a responder, said uniquely coded information field generated in said responder and comprising, in combination:

an interrogator means for establishing an AC power field at a first frequency and receiving said uniquely coded information field, and generating said output signal in response thereto;

a responder tag means positionable in AC power field and uniquely coded information field energy exchange relationship to said interrogator means for receiving said AC power field and generating said uniquely coded information field at a second frequency in response thereto;

said interrogator means comprising:

a power supply means for providing a source of controlled electric energy;

a power signal-time base generator means comprising a phase locked loop self timed at said first frequency, receiving said controlled electric energy from said power supply means and generating an AC power signal in response thereto, and said AC power signal comprising a self-timed phase locked power signal at said first frequency;

a power field generator means for receiving said self-timed phase locked power signal at said first frequency and generating said AC power field at said first frequency in response thereto for inductive coupling thereof into said responder tag means;

a coded information field receiver means for receiving said uniquely coded information field from said responder tag means and generating an uniquely coded information signal therein in response thereto;

coded information signal detection means powered by said controlled electric energy, for detecting the existence of said uniquely coded information signal in said coded information field receiver means and generating a detected coded signal in response thereto;

information capture and validation logic means, powered by said controlled electric energy, for receiving said detected coded signal from said coded information signal detection means and generating said output signal having an information content corresponding to said uniquely coded information field in response thereto;

said responder tag means comprises:

power field receiver means for receiving said AC power field from said power field generator means of said interrogator means and providing DC tag power signals in response thereto;

a code signal time-base generator means powered by said DC tag power signals for generating a code time-base signal at a third frequency;

code signal generator means powered by said DC tag power signals and receiving said code time-base signal for repetitively generating an unique clocked code signal clocked at said third frequency of said code time-base signal;

coded information signal and time-base generator means powered by said DC tag power signals for receiving said unique clocked code signal and generating a self-clocking coded information signal unique to said responder tag in response thereto; and

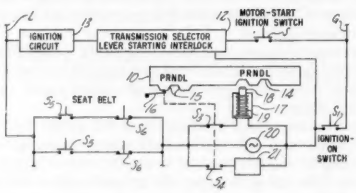
coded information field generator means for receiving said self-clocking coded information signal and generating said uniquely coded information field in response thereto for inductive coupling into said coded information field receiver means of said interrogator means.

3,859,625

INTERLOCK SAFETY BELT SYSTEM

Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed May 21, 1973, Ser. No. 362,150
Int. Cl. B60r *21/10*
U.S. Cl. 340—52 E **7 Claims**



1. A seat belt safety system for passenger vehicles, comprising in combination, an ignition circuit dependent only on the position of a travel selector, and a safety belt circuit which is energized when the engine starting switch is in the engine-run position, a seat switch and a seat belt switch, mechanical interlock means for retaining said travel selector in at least one selected position dependent upon the operating conditions of said seat switch and said seat belt switch, said mechanical interlock means being normally biased into non-locking position with respect to said travel selector and being biased into locking position with respect to said travel selector when said electro-mechanical means is projected, and said seat switch being normally open and becoming closed by seat occupancy, and said seat belt switch being normally closed and becoming opened when the belt of a seat is fastened, said seat switch and said seat belt switch being connected to said electro-mechanical means for projecting said mechanical interlock means into locking position when the travel selector is in a predetermined position of non-forward travel when both said seat switch and said seat belt switch are closed.

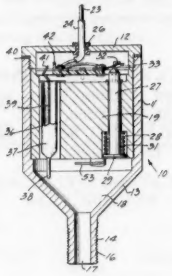
3,859,626

VEHICLE ENGINE OIL TEMPERATURE PRESSURE AND METAL DETECTING DEVICE

Mario Baratti, 900 S. Fifth Ave., Maywood, Ill. 60153

Filed June 7, 1973, Ser. No. 367,830
Int. Cl. G08b *19/00*
U.S. Cl. 340—52 F **4 Claims**

1. Apparatus for monitoring the pressure, temperature, and the presence of magnetic particles in a fluid comprising: a pressure monitoring switch mounted in said fluid and with a pair of contacts which close when the pressure of the fluid falls below a preset value; a temperature monitoring switch mounted to monitor the temperature of said fluid and with a pair of contacts which close when the temperature exceeds a pre-set value; a magnetic particle detecting switch including a magnetic contact and a second contact mounted in said fluid such that magnetic particles in said fluid close a circuit between said magnetic and second contact; a voltage source having first and second terminals and one of said contacts of said pressure monitoring, temperature monitoring, and magnetic particle detecting switches connected to a first terminal of said voltage source; a warning device with one side connected to the other contacts of said switches and the other side of said warning device connected to the second terminal of said voltage source, including a housing into which said fluid is received; a body member in said housing with one side in



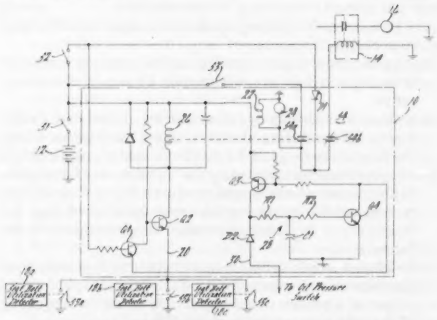
contact with said fluid, wherein said pressure switch comprises a plunger movably mounted in said body member such that variations in fluid pressure moves it, one of said pair of contacts of said pressure monitoring switch insulatingly mounted to said housing, wherein said temperature monitoring switch comprises a bimetallic member mounted to said body member and subject to fluid temperature, said one contact of said temperature monitoring switch mounted thereon and the other contact of the temperature monitoring switch insulatingly mounted to said housing, and wherein said magnetic contact of said magnetic particle detecting switch comprises a magnet mounted in said body member and said second contact is insulatingly mounted in said body member.

3,859,627

STARTER INTERLOCK CIRCUIT FOR A SEAT BELT UTILIZATION DETECTOR

Norman G. Quantz, Algonac, Mich., assignor to Lectron Products, Inc., Troy, Mich.

Filed Oct. 30, 1972, Ser. No. 302,045
Int. Cl. B60r *21/00*
U.S. Cl. 340—52 E **14 Claims**



1. For a vehicle having an engine with an ignition system, an ignition switch which is closable for energizing the ignition system of said engine and openable for de-energizing the

ignition system of said engine, a starter switch, a starter motor, and a seat belt utilization detector including switch means which is conductive on improper utilization of a seat belt for the vehicle and nonconductive on proper utilization of the seat belt for the vehicle a starter interlock circuit comprising: solenoid switch means having a coil and a pair of contacts which are closed so as to be conductive therebetween when said coil is not energized, said coil being adapted for connection in series with said seat belt utilization detector switch means, said contacts being adapted for connection intermediate and ignition switch and said starter motor so as to provide a current path for energization of said starter motor through said contacts when said contacts are closed; and

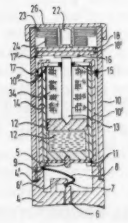
timing means including switch means connected in series with said coil and being adapted to connection in series with said seat belt utilization detector switch means, said timing means being adapted to hold said timing means switch means nonconductive for a predetermined time interval after the opening of said ignition switch and to render said timing means switch means conductive after said predetermined time interval;

said coil, said seat belt utilization detector switch means, and said timing means switch means forming a series circuit which is adapted for connection to a source of potential whereby the nonconductive condition of one of said seat belt utilization detector switch means indicative of proper utilization of said seat belt of said vehicle and said timing circuit switch means indicative of a lapse of a time less than said predetermined time interval prevents the energization of said coil whereby said solenoid contacts are closed so that said starter switch is effective to energize said starter motor.

3,859,628
ELECTRIC ALARM DEVICE FOR INDICATING THE VARIATION OF A PHYSICAL QUANTITY IN A VEHICLE TIRE

Fiorenzo Favini, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed June 11, 1973, Ser. No. 368,998
Claims priority, application Italy, June 16, 1972, 25764/72
Int. Cl. B60c *23/02*
U.S. Cl. 340—58 **7 Claims**



1. Apparatus for monitoring a physical quantity in a pneumatic tire and for providing an indication of a variation in said physical quantity outside a preset acceptable limit, said apparatus comprising:

a. a battery having two electrodes and an electrolyte contained in an outer casing, said electrolyte being contained in a sealed container within said outer casing;

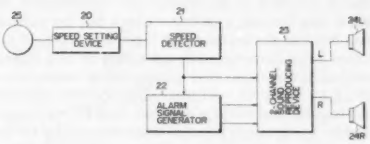
b. detector means for monitoring said physical quantity and detecting said variation outside said preset acceptable limit; and

c. means coupled to said detector means to open said sealed casing when said variation is detected, thereby permitting contact between said electrolyte and said electrodes to generate a voltage output.

3,859,629
SPEED ALARM SYSTEM FOR AN AUTOMOBILE

Kazuo Komiyama, Tokyo, and Takeharu Niioka, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 9, 1973, Ser. No. 358,490
Claims priority, application Japan, May 15, 1972, 47-47230
Int. Cl. B60q *1/54*
U.S. Cl. 340—62 **8 Claims**

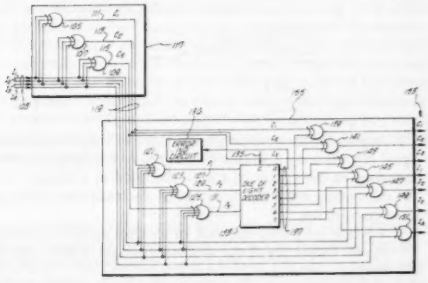


1. A speed alarm system mounted on an automobile with a car stereo device including an AC generator for generating an output voltage proportional in magnitude to a travelling velocity of the automobile comprising; a speed setting device coupled to the AC generator and being selectively set to a predetermined velocity; a speed limiting detector including a Schmitt circuit coupled to the speed setting device and being operated by the output thereof when the travelling velocity of the automobile reaches said predetermined velocity; an alarm signal generator coupled to the speed detector and adapted to be operated by the output of the speed detector to generate two intermittent alarm signals shifted in phase from each other; and means for coupling the alarm signal generator to a car stereo device installed in the automobile to deliver the two alarm signals respectively from the car stereo device whether or not it has been activated prior to the attainment of said predetermined velocity.

3,859,630
APPARATUS FOR DETECTING AND CORRECTING ERRORS IN DIGITAL INFORMATION ORGANIZED INTO A PARALLEL FORMAT BY USE OF CYCLIC POLYNOMIAL ERROR DETECTING AND CORRECTING CODES

Walter Scott Bennett, Diamond Bar, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 29, 1973, Ser. No. 327,867
Int. Cl. H04l *1/10*
U.S. Cl. 340—146.1 AL **6 Claims**



1. Apparatus for protecting data in a communication channel from errors by use of (n, k) cyclic polynomial codes having generating polynomial $g(x)$, wherein n is the total number of bits in an encoded word and k is the total number of information bits in an encoded word, comprising:

a parallel network of $(n - k) = r$ modulo-two gating means for encoding said k information bits to be inserted into said channel by forming a parallel codeword of k information bits plus r check bits, each check bit being generated in response to the modulo-two combination of certain k

data bits, the particular k data bits used for each combination being determined by the k data bit residue in the stage, that generates the respective check bit, of an $(n-k)$ stage shift register, upon having received the last of the k data bits to be encoded, said $(n-k)$ stage shift register being constructed in accordance with the generating polynomial $g(x)$ of the particular cyclic code chosen;

a parallel network of $(n-k)=P$ modulo-two gating means for receiving said codeword containing n bits and generating P error check bits, each error check bit being generated in response to the modulo-two combination of certain k data bits and a certain r check bit, the particular k data bits and particular r check bit used for each combination being determined by the k data bit and r check bit residue in the stage, that generates the respective error check bit, of an $(n-k)$ stage shift register, upon having received the last of the n data bits, said $(n-k)$ stage shift register being constructed in accordance with the generating polynomial $g(x)$ of the particular cyclic code chosen;

means responsive to the P error check bits for generating an $n+1$ bit wide pattern that indicates the bit in error in said received n bit codeword, or indicates a lack of errors when said n bit codeword is error-free; and

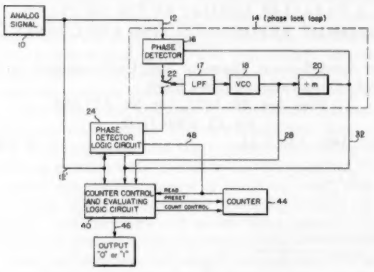
a parallel network of n modulo-two gating means, each gating means receiving a different bit of said received n bit codeword, said network being responsive to said $n+1$ bit wide bit pattern generating means for correcting errors in said received n bit codeword.

3,859,631

METHOD AND APPARATUS FOR DECODING BINARY DIGITAL SIGNALS

Robert S. Holmes, Rochester, and Walter M. Katz, Pittsford, both of N.Y., assignors to ComSci Data, Inc., Rochester, N.Y.

Filed July 16, 1973, Ser. No. 379,765
Int. Cl. H03k *13/32*
U.S. Cl. 340—146.1 R **10 Claims**



1. Apparatus for decoding a recorded or transmitted analog signal representing a stream of bits wherein a signal transition occurring at the center of a bit is decoded as a binary "1" or "0" depending upon the direction of the transition, said apparatus comprising:

a. a phase lock loop capable of locking onto a multiple of the bit frequency of the incoming stream of bits, said loop having

a first output at a preselected multiple of said bit frequency and

a second output defining the beginning and end of each bit;

b. a counter capable of operating at a preselected multiple of said bit frequency as determined by said first output;

c. means acting responsive to said second output for presetting said counter at the beginning of each bit; and

d. logic circuit means receiving said analog signal and both said first and second loop outputs, said logic circuit

means causing said counter to operate responsive to said first output in a mode which depends upon the level of the analog signal and the instantaneous position of the signal within said bit as determined by said second output, said logic circuit including

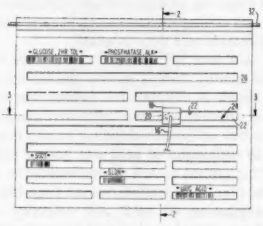
means examining the contents of said counter at the end of each bit cell as determined by said second output for determining the binary value of said bit.

3,859,632

DIGITAL INPUT SCANNER GUIDANCE SYSTEM

Gary Etter, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,076
Int. Cl. G06k *7/10*
U.S. Cl. 340—146.3 SY **2 Claims**



1. A document holding scan guide pocket and coacting optical sensor for assisting persons without special skills in data entry, to manually enter bar encoded standardized messages from a menu document, said messages being repeated on adjacent lines in human readable alphanumeric form, wherein the improvement comprises:

a pair of transparent guide layers attached to each other along three external edges for defining a pocket into which a document may be inserted, at least one of the attached external edges providing registration of said document within said pocket, each of said guide layers further comprising a plurality of parallel rectangular apertures defining scan paths therebetween and registered over lines of information on said document;

a hand-held sensor having parallel internal guide surfaces for engagement with parallel internal surfaces of two adjacent apertures of one of said guide layers to guide said sensor along said scan paths between said adjacent apertures while preventing substantial angles of rotation of said sensor with respect to said scan path;

a pair of transparent protective layers located between said guide layers, each of said protective layers being attached to one of said guide layers for protecting a document contained within said pocket.

3,859,633

MINUTIAE RECOGNITION SYSTEM

Allen P. Ho, Poughkeepsie, and Yee-Ming Ting, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

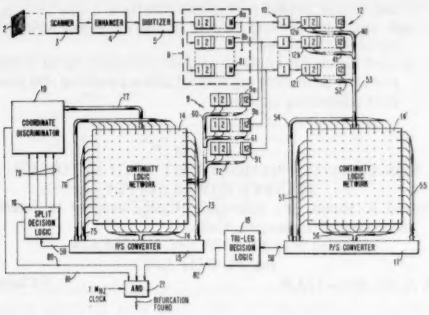
Filed June 29, 1973, Ser. No. 375,191
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 E **17 Claims**

1. A system for recognizing minutiae in a fingerprint comprising:

means for sensing selected areas of said fingerprint and for generating binary signals representative of the contrast between ridges and valleys in said fingerprint;

continuity logic means including a matrix of logic elements operative in response to said binary signal for forming conductive paths corresponding to the contrast between ridges and valleys;

means connected to said continuity logic means in response to said conductive path for providing an indication of a minutiae; and

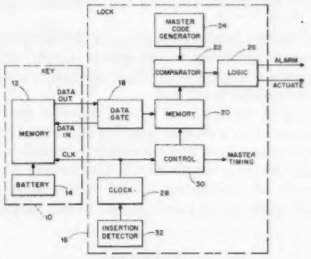


discriminator means connected to said continuity logic means for insuring that a particular minutiae is identified only once.

3,859,634
DIGITAL LOCK SYSTEM HAVING ELECTRONIC KEY CARD

Robert R. Perron, Beverly, and John T. Fowler, Winthrop, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 132,671, April 9, 1971, abandoned. This application Oct. 25, 1972, Ser. No. 300,770
Int. Cl. G11b 9/02
U.S. Cl. 340—149 A **15 Claims**



1. An electronic lock system operative in response to more than one key code and comprising:

key means adapted for use with an associated lock means and having a multistage electronic data memory operative to store an electrically alterable multiple bit key code and means for conveying said key code serially from said electronic data memory to said lock means in response to a command signal;

lock means adapted for operation with said key means and including

a multiple bit electronic data memory having at least two different predetermined groups of bit positions for storing respective key codes;

means for applying a key code from said key data memory to said lock data memory for storage therein;

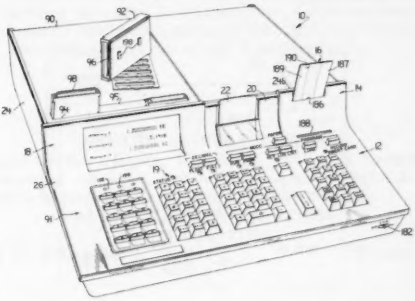
a least first and second decoder means each having a plurality of inputs for receiving a respective key code defined by said different predetermined groups of bit positions and each operative to provide an output signal in response to receipt of said respective key code; and

logic means for receiving said output signals and operative to provide a utilization signal in response thereto.

3,859,635
PROGRAMMABLE CALCULATOR

Robert E. Watson; Jack M. Walden, and Charles W. Near, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed June 15, 1971, Ser. No. 153,437
Int. Cl. G06f 15/02
U.S. Cl. 340—172.5 **17 Claims**



1. An electronic desk type calculator, portable calculator, or the like including an input unit for entering information into the calculator, a basic first memory unit into which information may be written and from which information may be read, a basic second memory unit for storing routines and/or subroutines to be executed by the calculator in performing selected functions, plug-in adaptor means for enabling the user to removably plug one or more additional second memory units for storing routines and/or subroutines to be executed by the calculator in performing additional selected functions into the calculator to increase the number of functions that may be performed by the calculator, processing means responsive to information from the input unit or the basic first memory unit and to operating states within the calculator itself for selectively executing one or more of the routine and/or subroutines stored in the basic second memory unit to perform one or more of the selected functions employing information from one or both of the input and basic first memory units, said processing means being further responsive to information from the input unit or the basic first memory unit and to operating states within the calculator itself when an additional second memory unit is plugged into the calculator for selectively executing one or more of the routines and/or subroutines stored in that additional second memory unit to perform one or more of the additional selected functions employing information from one or both of the input and basic first memory units, and an output unit for providing an output indication of the results of the selected and additional selected functions performed by the calculator.

3,859,636
MICROPROGRAM CONTROLLED DATA PROCESSOR FOR EXECUTING MICROPROGRAM INSTRUCTIONS FROM MICROPROGRAM MEMORY OR MAIN MEMORY

Robert Wilcox Cook, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 22, 1973, Ser. No. 343,656
Int. Cl. G06f 9/16
U.S. Cl. 340—172.5 **4 Claims**

1. A microprogram controlled data processor wherein execution of one microprogram instruction can determine the state of the processor for execution of subsequent instructions comprising:

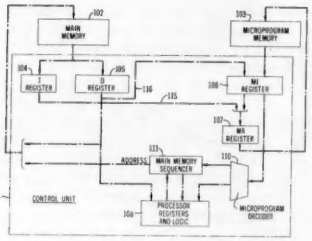
a random access readable and writable main memory;

a random access and read-only microprogram memory; and a control unit comprising:

means for obtaining memory words comprising main memory instructions, data or microprogram instructions from said main memory or for writing such memory words into said main memory;

memory register means for storing at least a portion of each of the memory words obtained from said main memory; a microprogram instruction register;

decoding means connected to said microprogram instruction register and responsive to the contents thereof for generating processor control signals;



means comprising a microprogram memory address register and first gating means for selectively transferring microprogram instructions from said microprogram memory to said microprogram instruction register;

second gating means for transferring microprogram instructions from said memory register means to said microprogram instruction register; and

a first flip-flop responsive to certain of said processor control signals generated during execution of microprogram instructions for selectively enabling or disabling respective ones of said first and second gating means during execution of subsequent microprogram instructions.

3,859,637

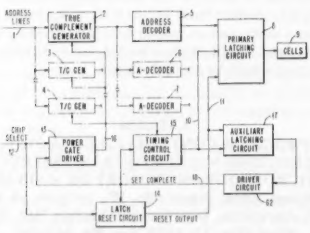
ON-CHIP AUXILIARY LATCH FOR DOWN-POWERING ARRAY LATCH DECODERS

Steven Platt, Underhill, Vt.; Jehoshua N. Pomeranz, Suffern, N.Y., and Dinesh K. Tewarson, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1973, Ser. No. 374,616

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **5 Claims**



1. In an array of electronic devices having primary latching circuits, each primary latching circuit being connected to respective devices for up-powering said devices when set to a first condition and for down-powering said devices when reset, said first condition being fulfilled by the concurrence of an address signal from powered addressing circuits and a set signal, means for down-powering said powered addressing circuits following the fulfillment of said first condition comprising;

an auxiliary latching circuit,

first means for applying said set signal jointly to said primary and to said auxiliary latching circuits,

said auxiliary latching circuit producing a set complete signal when set, and

second means for applying said set complete signal to said powered addressing circuits for down-powering said powered addressing circuits.

3,859,638

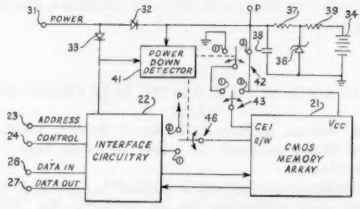
NON-VOLATILE MEMORY UNIT WITH AUTOMATIC STANDBY POWER SUPPLY

Alfred S. Hume, Jr., Sunnyvale, Calif., assignor to Intersil Incorporated, Cupertino, Calif.

Filed May 31, 1973, Ser. No. 365,624

Int. Cl. G11c *5/00*

U.S. Cl. 340—173 R **3 Claims**



1. An improved integrated circuit memory having interface circuitry connecting address and data in and data out terminals to a memory array with a power supply terminal connected to the interface circuitry and memory array and comprising

a small battery connected to V_{CC} of the memory array,

a detector connected to the power supply terminal and detecting a reduction in power at said terminal below a predetermined level, and

switching means operated by said detector for connecting said battery to a disable terminal and a read-write terminal of said memory array to minimize power consumption by said memory array whereby said battery maintains the integrity of information stored in said array during reduced or failure of power at said power supply terminal.

3,859,639

OPTICAL APPARATUS FOR ESTABLISHING LOGICAL RELATIONSHIPS AND FOR STORING

Uwe Helm, Rechter Allee, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 20, 1973, Ser. No. 390,170

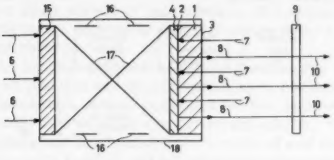
Claims priority, application Germany, Aug. 23, 1972, 2241461

Int. Cl. G11c *11/42*

U.S. Cl. 340—173 LS **9 Claims**

1. Arrangement for establishing logical relationships between, and for storing, binary light signals, the binary value of which is determined by the intensity of the light, of the type wherein a crystal (**1**) which is made of a Pockels-effect material and has two parallel major faces (**2, 3**) is provided with a dielectric mirror (**4**) on its inner major surface (**2**) and furthermore a photosensitive layer means (**5** or **15** respectively) arranged so as to face the dielectric mirror (**4**) for producing on the dielectric mirror a charge image which corresponds to a luminous intensity distribution when illuminated by at least one light signal (**6**), having a two-dimensional luminous intensity distribution corresponding to binary values, the individual charges being such that a beam of polarized light (**7**), which

is substantially normally incident on the outer major face (3) of the crystal (1) and is reflected from the dielectric mirror, emerges from the crystal (1) and light (8), the plane of polarization of which is rotated through an integral multiple of 90°, the improvement wherein at least two of the light signals



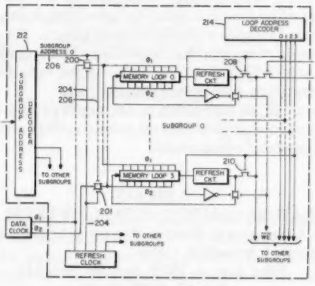
which illuminate this arrangement represent a plurality of binary elements in a preferably two-dimensional intensity distribution for establishing logical relationships, and that the light signal (8) which emerges from the crystal (1) is the binary light signal which represents the resulting logical relationhip.

3,859,640

CONCURRENT DATA ADDRESS AND REFRESH CONTROL FOR A VOLATILE LSI MEMORY SYSTEM

Delvin D. Eberlein, Edina, and Robert M. Englund, Golden Valley, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,503
Int. Cl. G11c *7/00, 21/00*
U.S. Cl. 340—173 DR **5 Claims**



1. The method of organizing a volatile LSI memory system for refresh control in which the memory system is organized in a plurality of N separate but similar serial-end-around-shift-register-forming memory loops each of which N memory loops is addressed by an associated separate one of N selection gates, the method comprising:

generating a data clock signal comprising a continuous series of data clock signal pulses of a data clock signal frequency F_D;

generating a sequential refresh clock signal comprising a continuously recurring series of N sequential refresh clock signal pulses at said data clock signal frequency F_D, each one of said N sequential refresh clock signal pulses recurring at a refresh clock signal frequency $F_R = F_D/N$; generating a data address select signal; coupling said data clock signal pulses in parallel to the N selection gates of said N memory loops;

sequentially coupling each separate one of said N sequential refresh clock signal pulses to the associated one of said N selection gates for gating the concurrent one of said data clock signal pulses through to the associated memory loop for sequentially refreshing said N memory loops at said refresh clock signal frequency F_R;

coupling said data address select signal to only a selected one of said N selection gates of said N memory loops for gating said data clock signal pulses to the associated selected one of said N memory loops and shifting the data bits in said associated selected one of said N memory loops in an end-around manner at said data clock signal frequency F_D;

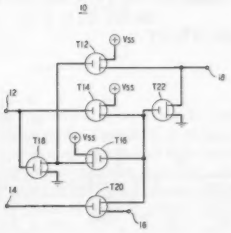
said data address select signal and one of said sequential refresh clock signal pulses concurrently occurring at said selected one of said N selection gates of said N memory loops for concurrently gating said data clock signal to said associated selected one of said N memory loops.

3,859,641

DYNAMIC BUFFER CIRCUIT

Donald Gordon Clemons, Walnutport, and James Howard Vogelsong, Allentown, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 10, 1973, Ser. No. 423,296
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **3 Claims**



1. A buffer circuit comprising:

first circuit means including a control port, a first port and a second port, said first means being adapted to selectively appear as an open or short circuit such that a voltage level applied to the first port is either isolated from or coupled to the second port;

second circuit means coupled to the control port of the first means for selectively causing the first means to appear as a short circuit;

third circuit means coupled to the control port of the first means for selectively causing the first means to appear as an open circuit; said third means including a control port; fourth circuit means coupled to the control port of the third circuit means for selectively controlling when the third circuit means causes the first circuit means to appear as an open circuit;

fifth circuit means including a control port, a first port, and a second port;

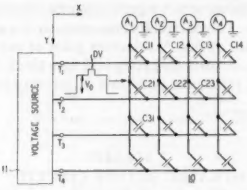
the first port of the fifth circuit means being coupled to the second port of the first circuit means; and

a sixth circuit means coupled to the control ports of the third and fifth circuit means, said sixth circuit means being adapted to selectively allow signal information applied thereto to be applied to the control ports of the third and fifth circuit means.

3,859,642
RANDOM ACCESS MEMORY ARRAY OF HYSTERESIS LOOP CAPACITORS

Jerry Mar, Santa Clara, Calif., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1973, Ser. No. 348,299
Int. Cl. G11c *11/22, 11/24*
U.S. Cl. 340—173 CA 8 Claims

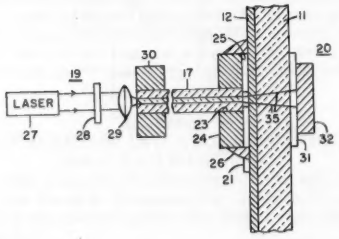


8. The method recited in claim 7 in which the first signal is a rectangular voltage pulse.

3,859,643
OPTICAL SENSING OF CYLINDRICAL MAGNETIC DOMAINS

Nicholas F. Borrelli, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 14, 1973, Ser. No. 415,525
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 YC 11 Claims



1. In a cylindrical magnetic domain propagation system comprising

a magnetic film in which said domains can be propagated, drive field means for moving said domains in a channel extending along said film, and

sensing means associated with said channel for sensing the presence and absence of domains at a given point along said channel,

said sensing means being characterized in that it comprises

means for radiating a beam of plane polarized light of wavelength λ,

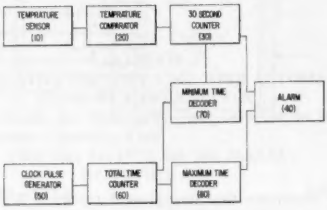
a single mode optical waveguide capable of transmitting light in only the HE_{11} mode at said wavelength λ, said waveguide having input and output ends, said input end being disposed in light receiving relationship with respect to said beam of plane polarized light, said output end being disposed adjacent to said magnetic film at said given point so that plane polarized light radiating from said output end passes through said film at said given point, and

output means disposed on that side of said magnetic film opposite said waveguide in light receiving relationship therewith for providing an output signal that is indicative of the presence or absence of domains at said given point.

3,859,644
TEMPERATURE RESPONSIVE COOKING TIMER

Duane C. Main, Woodridge, Ill., assignor to Burger Chef Systems Inc., Indianapolis, Ind.

Filed Apr. 24, 1973, Ser. No. 354,148
Int. Cl. H05b *1/02*; G08b *21/00*
U.S. Cl. 340—228 R 10 Claims



1. A temperature responsive cooking timer for controlling the cooking time of a cooker comprising:

means for sensing the cooking temperature of the cooker and providing an output signal which is a function of the temperature of the cooking medium; a comparator responsive to said output signal for developing a control signal when the temperature of the cooking medium reaches a predetermined value, pulse generator means for producing a continuous train of pulses equally spaced at a predetermined interval;

a pulse counter for totalling the individual pulses generated by said pulse generator;

a maximum time counter responsive to a predetermined count of said pulse counter;

a minimum time counter responsive to a predetermined count of said pulse counter for providing an inhibit signal corresponding to a predetermined count;

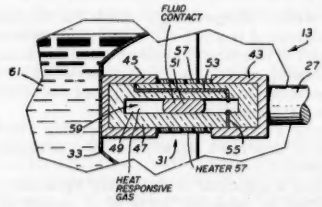
an interval pulse counter responsive to said control signal and said inhibit signal for totalling the individual pulses generated by said pulse generator, and

a control means responsive to an output of said maximum time counter or said interval pulse counter corresponding to a predetermined count.

3,859,645
TEMPERATURE COMPENSATED FLUID LEVEL SENSOR

Nikolaus A. Szeverenyi, Warren, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 4, 1973, Ser. No. 366,348
Int. Cl. G08b *23/00*
U.S. Cl. 340—244 R 15 Claims



1. A sensor device comprising:

a housing member defining a first chamber;

a thermally conductive member within said first chamber; a tip member secured to said housing and forming a closure for said first chamber;

an element positioned substantially within said first chamber and having a second chamber enclosed therein, said element having first and second spaced apart portions,

said first portion being joined in heat conductive relationship to said thermally conductive member and said second portion being secured in thermally conductive relationship to a surface of the tip member within said first chamber;

first and second connecting means positioned within said element, said first connecting means joined to said second spaced apart portion of said element, said second connecting means secured to said first spaced apart portion of said element;

means for heating said element including said second chamber and said first and second spaced apart portions;

movable contact means posilioned within said second chamber, said movable contact means adapted for approaching said first spaced apart portion of said element and engaging said first and second connecting means only when the temperature difference between said first and second portions of said element exceeds a predetermined level; and

heat responsive means for moving said movable contact means within said second chamber.

3,859,646

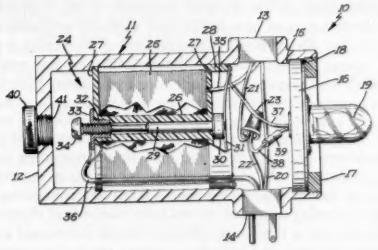
INLINE CONTINUITY INDICATOR DEVICE

Robert D. Schwellenbach, 1202 E. Sioux Ave., Pierre, S. Dak. 57501

Continuation of Ser. No. 175,645, Aug. 27, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,835

Int. Cl. G08b *5/36*

U.S. Cl. 340—253 R **3 Claims**



1. A small, compact inline indicator device adapted to be connected to the main circuit of an electrically operated apparatus for indicating alternating current flow from a source of alternating current through the apparatus, comprising:

a housing;

a female electrical coupling member mounted on said housing to electrically connect to the source of alternating electrical current, said male and female members being electrically connected to one another to permit current flow between the source of alternating current and the electrical apparatus;

an electromagnetic switch in said housing including a coil, an adjustable stationary switch element projecting interiorly of said coil, an armature in said coil and defining a movable switch element, said armature being in continuous steady contact with said stationary switch element when said coil is energized and being normally urged out of contact with the stationary switch element when said coil is de-energized, said coil being operatively connected in series between said male and female coupling members to be energized by alternating current flow to the electrical apparatus and being responsive to alternating current flow between said coupling members to immediately close said movable switch element in response to such alternating current flow and to reopen said movable switch element immediately when alternating current flow between said coupling members ceases;

an electrically operated signal mechanism producing a perceptable signal when energized;

a circuit for energizing said signal mechanism including said stationary and movable switch elements, said signal mechanism circuit being constructed and arranged to conduct current therethrough only when current flows through the electrically operated apparatus, thereby energizing said signal mechanism only when current flows through the electrically operated apparatus.

3,859,647

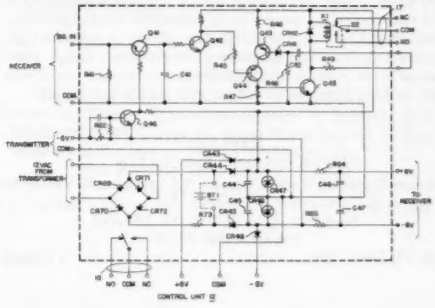
PHOTOELECTRIC INTRUSION SENSING DEVICE EMPLOYING SYNCHRONOUS DEMODULATION

Thaddeus Christopher Ross, Santa Barbara, Calif., assignor to Infrared Industries, Inc., Santa Barbara, Calif.

Filed Aug. 25, 1971, Ser. No. 174,715

Int. Cl. G08b *13/18*

U.S. Cl. 340—258 B **7 Claims**



1. An intrusion sensing system comprising, in combination: a control unit; a transmitter for transmitting pulses of optical energy; a receiver arranged along a line of sight such that said pulses of optical energy are incident thereon, said receiver simultaneously detecting and providing an output pulse to said control unit for each pulse of optical energy detected; said control unit including means for supplying power to said transmitter, and monitoring means for monitoring the operation of said transmitter in transmitting a pulse of optical energy; gating means operated by said monitoring means to receive said output pulse from said receiver, said transmitter in transmitting a pulse of optical energy creating a power line disturbance, said monitoring means detecting said power line disturbance and simultaneously in response to the same gating said gating means to receive said output pulse from said receiver, and means operated responsive to the receipt of said output pulse from said receiver to cause said control unit to indicate a safe condition, said last-mentioned means being responsive in the absence of said output pulse or the receipt of an output pulse which is out of phase or of the wrong polarity to cause said control unit to indicate an alarm condition.

3,859,648

INTRUDER DETECTION SYSTEM UTILIZING ARTIFICIAL AMBIENT LIGHT

Patrick L. Corbin, 13109 Circle Dr., Burnsville, Minn. 55337

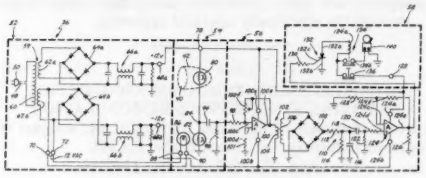
Filed Feb. 26, 1973, Ser. No. 335,804

Int. Cl. G08b *13/18*

U.S. Cl. 340—258 B **9 Claims**

1. An intruder system responsive to artificial ambient light derived at least in part from a 60 cycle alternating power supply, the system comprising a photosensor disposed so as to provide an electric signal having a value representative of the amount of ambient light impinging thereon which signal contains a fluctuating component in accordance with the frequency of said power supply, means controlled only by a

sufficient change in value of the fluctuating component of said electric signal to provide an output signal, a reference lamp energized from said power supply, a second photosensor disposed so as to receive light only from said reference lamp to provide an electric signal having a value representative of the amount of reference light impinging thereon, said photosen-



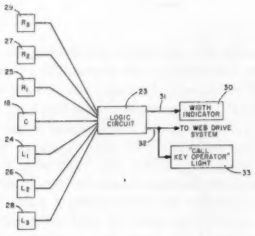
sors being connected in series with a junction therebetween, and said controlled means being connected to said junction, whereby the system is sensitive to a change in ambient light derived only from said alternating current power supply when caused by an intruder and is insensitive to changes in ambient light derived from sources other than said power supply.

3,859,649

WEB SENSING APPARATUS

William Frederick Slack, Andover, N.J., assignor to Van Dyke Research Corporation, Whippany, N.J.

Filed Oct. 2, 1972, Ser. No. 294,193
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 **5 Claims**



1. Web sensing apparatus, comprising:

a web supporting plate having a web supporting surface with a central aperture and a plurality of laterally displaced pairs of apertures therein, the apertures of each pair being disposed on opposite sides of said central aperture; a central web sensing leaf and a plurality of pairs of web sensing leaves, each leaf extending through a corresponding one of said apertures and protruding outwardly from said web supporting surface, each leaf being resiliently mounted for inward deflection upon engagement by a web disposed on said web supporting surface;

the lateral distance between the outer pair of leaves most laterally displaced from said central aperture being greater than the width of the widest web to be accommodated by said apparatus;

a plurality of switching elements, each element being responsive to the position of a corresponding one of said leaves with respect to said web supporting surface; and

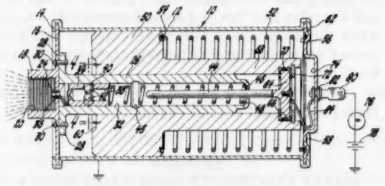
a logic circuit coupled to said switching elements for providing a web width signal indicative of the width of an elongated web longitudinally disposed on said plate between said outer leaves, and for providing a warning signal (i) when said central leaf is not inwardly deflected, (ii) when only one leaf of any pair is inwardly deflected, and (iii) when either of said outer leaves is inwardly deflected.

3,859,650

ACCELERATION-RESPONSIVE SENSOR WITH READINESS INDICATOR CIRCUIT

Otakar P. Prachar, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1973, Ser. No. 419,987
Int. Cl. G08b *21/00*; B60q *1/00*
U.S. Cl. 340—262 **1 Claim**



1. An acceleration-responsive sensor comprising, in combination, a support, an operator mounted on the support for movement between unactuated and actuated positions relative thereto, means biasing the operator to the actuated position, detent means movable between detent and released positions with respect to the operator and holding the operator in unactuated position when the detent means is in detent position, a seismic mass mounted on the support for movement relative thereto when subjected to an acceleration pulse of predetermined amplitude and time, detent operating means engageable with the detent means to maintain the detent means in detent position, means operatively connecting the detent operating means to the mass for concurrent movement therewith, and a readiness indicator circuit connected across a source of power and including a signal, the detent operating means, and the detent means, the engagement of the detent means and detent operating means providing a switch in the circuit controlling the signal to indicate a ready state of the sensor, the disengagement of the detent operating means from the detent means upon movement of the detent operating means concurrently with movement of the mass controlling the signal to indicate a nonready state of the sensor and moving the detent means to released position to permit the operator to move to actuated position.

3,859,651

BOOM ANGLE INDICATOR

Thomas W. Thomas, Jr., 121 Hawthorne Way, San Rafael, Calif. 94903

Filed Jan. 14, 1974, Ser. No. 432,974
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 C **4 Claims**

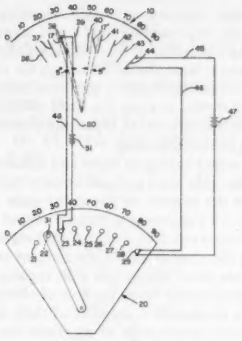
1. A boom angle indicator comprising in combination:

A. A boom-mounted, gravity-actuated indicator including a pivoted pointer and a scale with one of said pointer and scale, weighted to remain in a vertically-oriented position established by gravity regardless of the boom angle, and the other of said pointer and scale fixed to the boom,

B. A magnet associated with said pointer,

C. A plurality of magnetic switches mounted on said scale, spaced a predetermined number of degrees apart and

positioned to be actuated by the magnet on the pointer when the magnet superimposes a switch.



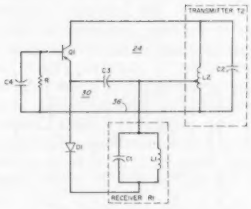
D. Said switches actuating lights on a remotely mounted scale to indicate the boom angle.

3,859,652

METHOD AND APPARATUS FOR DETECTING THE THEFT OF ARTICLES

Roger L. Hall, Francestown; Edward S. Wainwright, Nashua, both of N.H., and Kenneth Clarkson, Tonasket, Wash., assignors to North American Systems Corp., Londonderry, N.H., by said Hall and Wainwright

Filed June 26, 1972, Ser. No. 266,130
Int. Cl. G08b *13/22*
U.S. Cl. 340—280 **6 Claims**



1. A system for detecting the unauthorized removal of articles from an enclosure having a checkout area and a passageway through which said articles may be moved, said system comprising;

a transmitter of a signal of first signal characteristic disposed at said passageway,

a receiver of a signal of second signal characteristic disposed at said passageway and being non-responsive to a signal of first signal characteristic,

means for establishing an alarm condition when said receiver receives a signal of second signal characteristic,

a detection signal attached to the article and comprising a receiver of a signal of first signal characteristic, a transmitter of a signal of second signal characteristic, and means responsive to a signal, of a level less than a predetermined threshold level, from said receiver of a signal of first signal characteristic for providing power to said transmitter of a signal of second signal characteristic,

a power transmitter of a signal of first signal characteristic disposed at said checkout area for establishing a signal of a level greater than said predetermined threshold level from said receiver of a signal of first signal characteristic to thereby inhibit the providing of power to said transmitter of a signal of second signal characteristic when said article is at said checkout area,

whereby said receiver of a signal of second signal characteristic receives a signal to thereby establish an alarm condition when an unauthorized removal of said article has occurred, and does not receive a signal when an authorized removal has occurred,

said receiver of first characteristic comprising a tank circuit and said transmitter of said second characteristic comprising a tank circuit, said power providing means including a transistor having an input electrode and an output electrode,

means for biasing the transistor including a resistor coupled to the input electrode of the transistor, a diode coupling from the output electrode of the transistor to one of the tank circuits and capacitance means coupling from the output electrode of the transistor to both tank circuits,

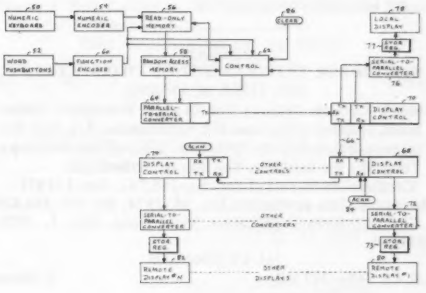
each said tank circuit including an inductor defining part of the tank circuit and forming an antenna means for transmitting or receiving signals.

3,859,653

BOWLING LANE MECHANIC CALL SYSTEM

Herman L. Tillman, Plantation; Stephen N. Schrock, Fort Lauderdale, and Gerald M. King, Plantation, all of Fla., assignors to Herman L. Tillman, Plantation, Fla.

Filed June 22, 1973, Ser. No. 372,562
Int. Cl. G08b *23/00*
U.S. Cl. 340—323 **6 Claims**



1. A mechanic call system for use in connection with bowling lanes, comprising:

A. a read-only memory for storing predetermined multicharacter word functions

B. a temporary memory for temporarily storing individual multicharacter word functions taken from the read-only memory

C. a plurality of pushbuttons, including encoder means for causing any one of the pushbuttons, when pushed, to cause the read-only memory to deliver an individual multicharacter word function for temporary storage in the temporary memory,

D. means for causing the temporarily stored word function to be applied as serial data to a transmission line,

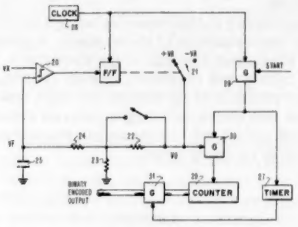
E. means at a remote location for causing the serial data to be taken from the transmission line and displayed, and

F. means for generating an acknowledge signal at the remote location and for transmitting said signal back over the transmission line, and G. means at the location of the temporary memory responsive the acknowledge signal for clearing the temporary memory.

3,859,654
ANALOG TO DIGITAL CONVERTER FOR ELECTRICAL SIGNALS

Thomas J. Harrison, Boca Raton; George A. Hellwarth, Deerfield Beach, and Richard C. Jaeger, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 11, 1972, Ser. No. 296,707
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 AD **11 Claims**

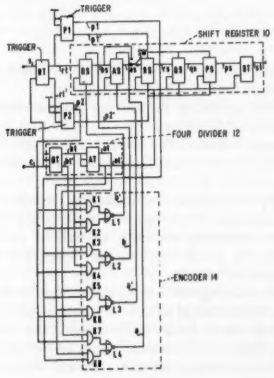


7. Apparatus in accordance with claim **6** wherein
said comparator is a differential amplifier having one input connected to a ground reference,
said first coupling means includes a first resistive element, said second coupling means includes a second resistive element,
a capacitor connected on one side to said ground reference and commonly connected on the other side to (a) said first and second resistive elements and (b) a second input for said differential amplifier.

3,859,655
SYSTEM FOR THE TRANSFER OF TWO STATES BY MULTIPLE SCANNING

Hendrik Cornelis Anthony Van Duuren, Wassenaar, Netherlands, assignor to De Staat Der Nederlanden, Ten Deze Vertegenwoordigd Door De Directeur Generaal Der Posterijen, Telegrafie En Telefonie, The Hague, Netherlands

Continuation-in-part of Ser. No. 185,741, Oct. 1, 1971, abandoned. This application Jan. 18, 1974, Ser. No. 434,829
Claims priority, application Netherlands, Oct. 1, 1970, 7014414
Int. Cl. G06f *5/00*
U.S. Cl. 340—347 DD **9 Claims**

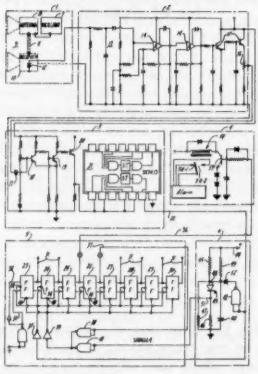


1. A system for the transfer of information relating to the point of time and direction of transitions between two states of a biphase input signal comprising:
a transmitting means including,
means to scan said biphase input signal at a fixed repetition rate, and
encoding means responsive to said scanning means and having means representing said input signal in a code word having a plurality of bits indicating the direction of transition and at least one bit indicating the time of occurrence of the transition relative to a fixed pattern of repetition time intervals, wherein the fixed pattern is repeated at a selected multiple of the repetition time intervals; and a receiving means including,
shift register means having an input and a plurality of stages receiving the code word and additionally having one stage in excess of the number of bits in the code word,
output means for generating a biphase output signal, and
logic circuit means connected to said shift register stages for controlling the state of said output means in accordance with the code word bits in said shift register stages,
said logic circuit means being capable of effecting a majority decision as regards a plurality of shift register stages including said excess stage to ascertain the direction of the transition.

3,859,656
INSTRUSION DETECTION MEANS HAVING CYCLE COUNTING INTERLOCK RESPONSE CONTROL MEANS

Carl F. Klein, and James R. Bailey, both of Milwaukee, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Aug. 3, 1972, Ser. No. 277,494
Int. Cl. G08b *13/22*; **G01s** *9/02*
U.S. Cl. 343—5 PD **14 Claims**



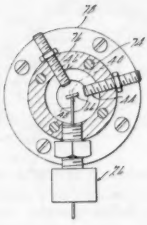
1. An intrusion detection apparatus wherein the movement of an object within a selected secured area generates a series of pulse signals related to such movement, comprising counting means to detect the number of said pulse signals and having an output means activated in response to a selected predetermined plurality of said signals, a timing control means operable to control said counting means to eliminate the effect of the receipt of selected signals and operably disabled in response to said pulse signals to require a subsequent receipt of said predetermined plurality of said signals to activate said output means, said counting means to detect the number of said pulses including a clock counter having a plurality of counting stages and establishing a corresponding plurality of related output connection means, said output means being selectively connected to one of said output connection means to respond to a corresponding count, and said counter having a counter reset means connected to a subsequent connection

means following the connection means connected to said output means.

3,859,657
SECOND HARMONIC FILTER FOR HIGH FREQUENCY SOURCE

Francis L. Sterner, Tempe, Ariz., assignor to Omni Spectra, Inc., Farmington, Mich.

Filed Oct. 18, 1972, Ser. No. 298,635
Int. Cl. G01s 9/42; H03b 1/04
U.S. Cl. 343—5 PD **47 Claims**



1. A high frequency system comprising:

means for generating electromagnetic energy at a fundamental frequency and at the second harmonic frequency of the fundamental frequency including a housing a port which is substantially dimensioned for transfer of said electromagnetic energy at the fundamental frequency therethrough but has at least one dimension which is a predetermined degree different than the optimum dimension for transfer of said electromagnetic energy at the fundamental frequency therethrough so that said port has a predetermined impedance value at the fundamental frequency; and

filter means for attenuating said energy at the second harmonic frequency of said fundamental frequency including member means proximate to and extending transversely of said port being dimensioned to provide a value of inductance and capacitance for attenuating said energy at the second harmonic frequency, one of said values of inductance and capacitance of each member means being selected at least in part to offset said predetermined impedance value of said port at the fundamental frequency.

3,859,658
CONICAL SCAN TRACKING SYSTEM

Gerald Rabow, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Oct. 16, 1972, Ser. No. 298,059
Int. Cl. G01s 3/56, 9/02
U.S. Cl. 343—7.4 **5 Claims**

1. A system to track a source of energy comprising:

an antenna having a given radiation pattern in communication with said source to receive energy from said source;

a pseudo-random code generator to produce a pseudo-random code signal;

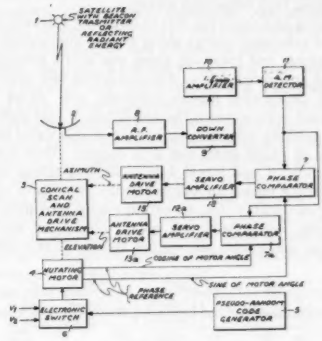
a nutating motor;

a first source of voltage having a first given magnitude;

a second source of voltage having a second given magnitude greater than said first given magnitude;

switch means coupled to said nutating motor, said code generator and said first and second sources of voltage, said switch means coupling said voltages of said first and second sources to said motor in response to said pseudo-random code signal produced by said generator to control the speed of said nutating motor in a pseudo-random manner and thereby nutate said radiation pattern about a given axis at a pseudo-random rate;

first means coupled to said antenna to detect amplitude modulation of said energy, said amplitude modulation being at said pseudo-random rate when there is a pointing error between said given axis and said source; and

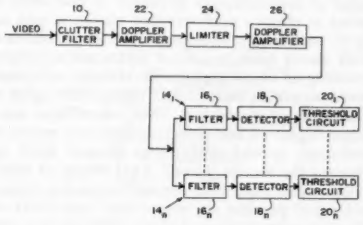


second means coupled to said nutating motor and said first means to compare the phase of said amplitude modulation of said energy with the phase of said nutation and to produce a signal proportional to the direction and magnitude of said pointing error.

3,859,659
CLUTTER SUPPRESSION CIRCUIT

Eugene J. Heft, Lexington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 19, 1970, Ser. No. 90,927
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **7 Claims**



1. In an MTI radar receiver, apparatus for suppressing response to clutter including a plurality of predetection filters having different pass bands, wherein the improvement comprises means for limiting the power applied to all of said filters to a predetermined amount, whereby the power of wide bandwidth signals will be divided by said filters and the power of narrow bandwidth signals will be passed mainly by a single filter.

3,859,660
DOPPLER RADAR FOR LAND VEHICLES

Carroll F. Augustine, Farmington, and Raymond E. Anderson, Dearborn Heights, both of Mich., assignors to Midwest Microwave, Inc., Ann Arbor, Mich.

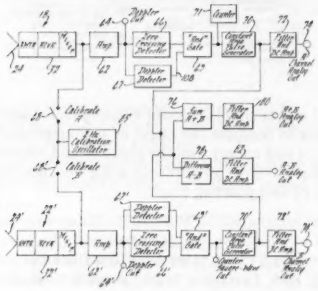
Filed Feb. 14, 1972, Ser. No. 226,108
Int. Cl. G01s 9/46, 9/04
U.S. Cl. 343—9 **2 Claims**

1. In combination with a land vehicle traveling longitudinally along a roadway for the land vehicle, a system comprising:

generating and doppler detecting means for generating high frequency electromagnetic energy and for providing a signal representative of a phase shift between a returned part of said high frequency energy and a generated part of said high frequency energy;

directing and receiving means directing at least a portion of said generated energy along an axis intersecting with said roadway and receiving along said axis a returned part of said generated energy directed along said axis; and

signal processing means receiving said signal including means responsive to the amplitude of said signal for distinguishing between one portion of said signal representative of phase shifts due to a doppler effect and another portion of said signal due to another effect, said distinguishing means including doppler responsive means having an input means, an output means providing an output signal, and a feedback means connected between said input means and said output means for providing a feedback signal, said input means being connected to receive said signal and said feedback signal, said feedback signal being provided in opposition to said signal whereby a signal of predetermined amplitude at said input is required to effect a predetermined change in said output signal, and said distinguishing means further including an AND means having a pair of inputs and an output for providing an output signal in accordance with predetermined signals at both of said inputs, said signal being connected to one of said AND means input and said output signal of said doppler responsive means being connected to said other input of said AND means whereby the receipt by said AND means of both said output signal from said doppler responsive means and said signal provides an output from said AND means which is representative of phase shifts due to a doppler effect consequent longitudinal movement of said land vehicle.



3,859,661

ANTI-JAMMING RADAR RECEIVER

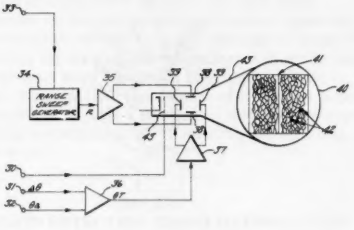
Abraham E. Ruvin, Massapequa, and Charles A. Fowler, Upper Brookville, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 23, 1963, Ser. No. 332,980

Int. Cl. G01s *7/16, 7/36*

U.S. Cl. 343—18 E **3 Claims**

2. In an anti-jamming radar having an antenna propagating a pair of beams at the same elevation angle in two closely spaced azimuth directions and receiving first and second incoming signals to be added and subtracted to provide a separate sum and difference signals, a radar receiver and its associated display oscilloscope comprising a mixer receiving said sum and difference signal for mixing and providing three output signals, a first detector receiving a first and second input signal by way of said mixer and providing an output signal that is representative of the ratio of said sum and difference signal, a second detector receiving said third output signal from said mixer and providing a normal video output signal, a wide-band filter also receiving said third output signal, a narrow band filter receiving the output signal from said wide-band filter by way of a wide-band limiter, a third detector connected to said narrow band filter and also operating to provide a video output signal, an oscilloscope having cathode, control grid and a pair of vertical and horizontal deflection plates, said video output signals from said second and third detectors being applied to said control grid, said vertical plates receiving a range sweep voltage, a summing amplifier having two inputs, one of said two inputs receiving the output signal from said first detector, the other of said two inputs receiving a d.c. voltage representative of the azimuth angle of said antenna, and a push-pull amplifier receiving the resultant signal from said summing amplifier and operating to provide a pair of signals to said pair of horizontal plates.



3,859,662

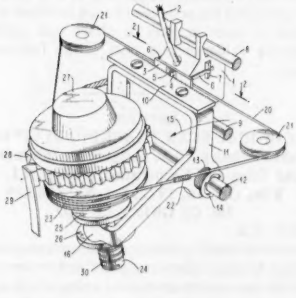
TRANSDUCER TRACK SELECTION APPARATUS

Adolph Broadus Habich, and John Wesley Ward, Jr., both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1973, Ser. No. 365,308

Int. Cl. G11b *5/54*

U.S. Cl. 360—106 **10 Claims**



1. A transducer track selection apparatus comprising:

means for selecting and holding a coarse adjustment representative of a desired particular one of a plurality of track positions of said transducer;

means for connecting said said selecting and holding means to said transducer;

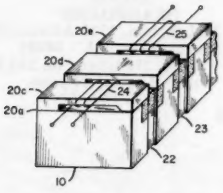
means engageable with said transducer for providing a fine adjustment of said transducer; and

means connected to said fine adjustment means and engageable with said selecting and holding means for disengaging said fine adjustment means from said transducer during movement of said selecting and holding means, said transducer engaging said fine adjustment means at the completion of each track selection.

3,859,663
MULTICHANNEL TRANSDUCER WITH GLASS SUPPORT ELEMENTS

Donald T. Best, Lafayette Hill, and Thomas J. Tidd, Springfield, both of Pa., assignors to Sperry Rand Corporation, Blue Bell, Pa.

Filed June 18, 1973, Ser. No. 371,077
Int. Cl. G11b *5/27, 5/22*
U.S. Cl. 360—121 **3 Claims**

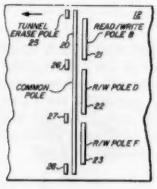


1. A multichannel magnetic transducer assemblage comprising: a unitary I piece which includes a ferrite block member having top, front, bottom and rear faces wherein the intersection between the front and top faces forms a front edge for the top face of the block and the intersection between the top and rear faces forms a rear edge for the top face of the blo'k, a series of uniformly spaced ramp-like slots extending downwardly from a line intermediate said front and rear edges of the top face of said block to a line intermediate the front edge of said block and the bottom face of said block, said series of slots forming a series of teeth along the front edge of said block, a series of spaced C-shaped ferrite slabs bonded to the top face of said block, each of said slabs overlying a respective tooth of said series of teeth to form with said teeth a series of active transducer gaps spaced along the front edge of said block and a corresponding series of back gaps spaced along the rear edge of said block, and a melted glass material filling each of said slots to provide structural support for said teeth and the overlying C-shaped ferrite slabs.

3,859,664
BATCH FABRICATED THIN-FILM TRANSDUCERS HAVING A COMMON POLE WITH TUNNEL ERASE POLES AND A PLURALITY OF READ/WRITE POLES

William R. Chynoweth, and Wolfgang Kayser, both of Oklahoma City, Okla., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed July 9, 1973, Ser. No. 377,684
Int. Cl. G11b *5/26, 5/27*
U.S. Cl. 360—121 **6 Claims**



1. A multitrack recording head having a plurality of transducers for use with a moveable magnetic medium, said recording head comprising:

a substrate;

a common magnetic pole;

a plurality of magnetic read/write poles, said read/write poles being mounted in a row on said substrate with a space between each of said read/write poles, said common pole being mounted adjacent to each of said read/write poles, with each of said read/write poles being in a series magnetic relation with a portion of said common pole;

a plurality of read/write conductors, each of said read/write conductors being inductively coupled to a portion of said common pole and to a corresponding one of said read/write poles, each of said read/write conductors being mounted between a portion of said common pole and the corresponding one of said read/write poles;

a magnetic material, a portion of said material being connected between said common pole and a corresponding one of each of said read/write poles to form a plurality o read/write transducers each having a gap defined by said read/write conductor adjacent said magnetic medium;

a plurality of erase poles, said erase poles being mounted in a row adjacent said common pole with said common pole between said row of erase poles and said row of read/write poles, said erase poles being spaced so that each portion of the magnetic medium which moves past the space between the read/write poles, moves past a corresponding one of said erase poles;

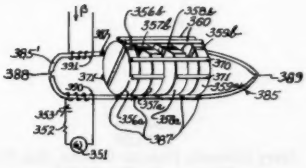
an erase conductor, said erase conductor being mounted between said common pole and each of said erase poles; and

a magnetic substance, a portion of said substance being connected between said common pole and a corresponding one of each of said erase poles to form a plurality of erase transducers each having a gap defined by said erase conductor adjacent to said magnetic medium.

3,859,665
DISTORTIONLESS MAGNETIC HEAD USING INTEGRAL MECHANICAL FILTER MEANS

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed June 25, 1973, Ser. No. 372,906
Int. Cl. G11b *5/12*
U.S. Cl. 360—125 **27 Claims**



1. A magnetic head, comprising in combination:

magnetizable core means for establishing a principal path for magnetic flux in said head;

coil means integral with the magnetizable core means for providing said magnetic flux during recording mode or for sensing said magnetic flux during reproduce mode; and

mechanical filter means integral with the magnetizable core means for filtering the flux to pass a bandwidth of information and carrier signal while attenuating harmonic components of the carrier signal,

said mechanical filter means comprises:

an array of magnetizable disks excited by said magnetic flux during said recordingg or reproduce mode, said disks being positioned parallel to and spaced apart from each other, each of said disks comprising two half portions;

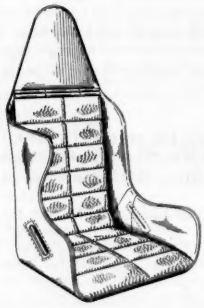
non-magnetic material joining the half portions of each said disk for providing magnetic discontinuities in each of the disks; and

coupling wires joining the outer peripheries of the disks.

DESIGNS

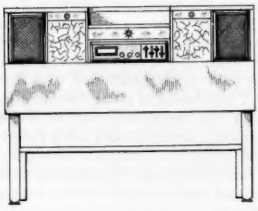
JANUARY 7, 1975

234,033
RACING CAR SEAT
Kenneth D. Tarbet, 298 E. Bellevue, Atwater, Calif. 95301
Filed Mar. 7, 1973, Ser. No. 338,653
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



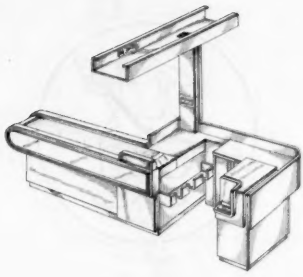
234,034
CHAIR
Jerry Johnson, Rancho Cuerdo, Box 50, Portrero, Calif. 92063
Filed May 10, 1973, Ser. No. 359,007
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56

234,035
HEADBOARD
John J. McLaughlin, 2700 Absecon Blvd., Atlantic City, N.J. 08401
Filed Feb. 16, 1973, Ser. No. 333,178
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—80

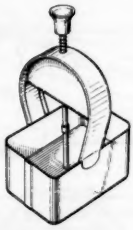


234,036
TOOTHBRUSH HOLDER
Harmon A. Nixon, 811 Lindberg Drive, Apt. 112, Atlanta, Ga. 30324
Filed Sept. 5, 1972, Ser. No. 286,086
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—94

234,037
COMBINED CHECK-OUT COUNTER AND CANOPY THEREFOR
Thomas Charles Abrahamsen, Birmingham, Mich., and John Dino Zaccai, Arlington, Mass., assignors to RCA Corporation
Filed Apr. 20, 1972, Ser. No. 246,120
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—143

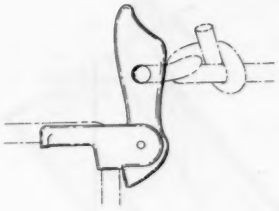


234,038
HONEYCOMB CUTTER
Neil Price, Lunebank, 15 Church Brow, Halton, Lancaster, England
Filed Mar. 28, 1973, Ser. No. 345,542
Term of patent 3½ years
Int. Cl. D7—*04*
U.S. Cl. D7—43



234,039
COMBINED WOODEN MIXING AND MEASURING SPOON
Robert Sidney Lutzker, Queens Village, N.Y. (21 Lee Ave., East Williston, N.Y. 11596)
Filed July 12, 1973, Ser. No. 378,508
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—50

234,040
LOOP-FORMING CORD FASTENER
Glaudel Cole, 4 Marion Ave., Poughkeepsie, N.Y. 12601
Filed Aug. 13, 1973, Ser. No. 388,023
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—229

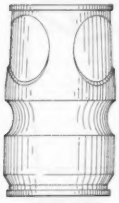


234,041
BOTTLE
Fred J. Jacobs, Fairlawn, N.J., assignor to Knomark Inc., Jamaica, N.Y.
Filed Sept. 28, 1972, Ser. No. 293,076
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—129

234,042
COOLING SYSTEM CONTAINER
Frederic D. Barton, Kaneohe, Hawaii, assignor to Fre-Bar Inc., Holly, Mich.
Filed Aug. 16, 1971, Ser. No. 172,367
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—175

234,043
COMBINED PACKAGE OF INDIVIDUALLY DETACHABLE BAGS AND HANGER THEREFOR
Erich Vetter, Huntington, N.Y., assignor to Uniflex, Inc., Westbury, N.Y.
Filed Oct. 16, 1972, Ser. No. 297,684
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—191

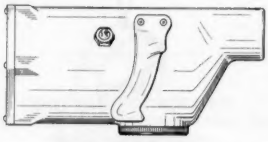
234,044
CAN OR SIMILAR ARTICLE
Gary Hasegawa, Chicago, and Carmen T. Mascia, Westmont, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed May 21, 1973, Ser. No. 362,591
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

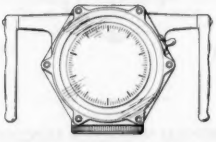


234,045
CLOCK OR SIMILAR ARTICLE
Mark Wallach, 220 E. 63rd St., New York, N.Y. 10021
Filed Oct. 1, 1971, Ser. No. 185,922
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—21

234,046
WATCH
Richard Q. Yardley, 4413 Sedgewick Road, Baltimore, Md. 21210
Filed Jan. 28, 1970, Ser. No. 21,125
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—35

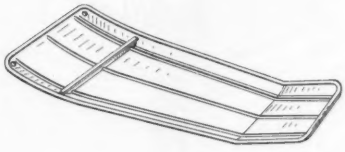
234,047
UNDERWATER SONAR APPARATUS
Forrest L. Murdock, Tulsa, Okla., assignor to Fishmaster Products, Inc., Tulsa, Okla.
Filed May 18, 1973, Ser. No. 361,531
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D10—46



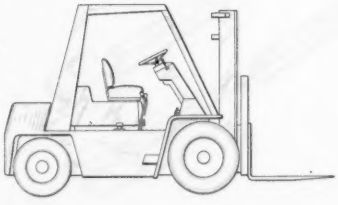


234,048
SUPPORT ARM FOR INDICATOR GAUGE
Howard L. Hall, 1608 Evans Ave., Valparaiso, Ind. 46383
Filed Nov. 20, 1972, Ser. No. 308,019
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—74

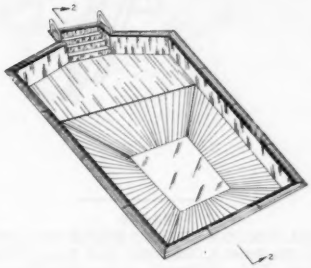
234,049
TOBOGGAN
Wilho E. Isolampi, 116 Bridge St., Gary, Ind. 46404
Filed Oct. 24, 1972, Ser. No. 299,693
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—11



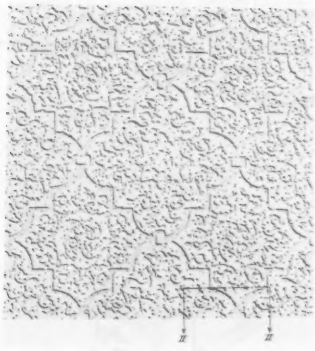
234,050
LIFT TRUCK
John T. Crawford, Lyndhurst, Ohio, and Bernard E. Erlacher, Washington, Ill., assignors to Towmotor Corporation, Mentor, Ohio
Filed Feb. 8, 1974, Ser. N. 440,696
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—57



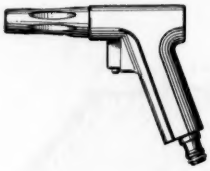
234,051
SWIMMING POOL
Louis Fontana, Shirley, N.Y., assignor to Oasis Pools, Inc., Shirley, N.Y.
Filed Aug. 30, 1972, Ser. No. 285,019
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 G



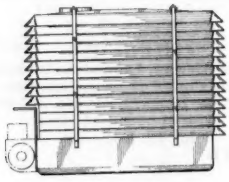
234,052
CEILING TILE
Joseph E. Sienkiewicz, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Mar. 26, 1973, Ser. No. 344,943
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B



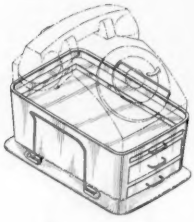
234,053
SPRAY GUN
Dieter Raffler and Franco Clivio, Ulm, Germany, assignors to Messrs. Kupex AG., Glarus, Switzerland
Filed Jan. 12, 1973, Ser. No. 323,062
Claims priority, application Germany July 15, 1972
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—17



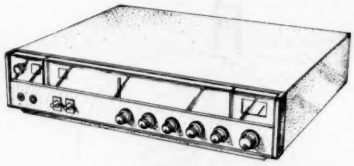
234,054
OIL-FIRED RADIANT SPACE HEATER
Malcolm W. Patrick, Danville, and Joseph W. Adams, Westlake, Ohio, assignors to Bettcher Manufacturing Corporation, Cleveland, Ohio
Filed Apr. 5, 1973, Ser. No. 348,640
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



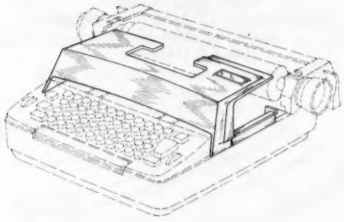
234,055
TELEPHONE MESSAGE STAND
William J. Woods, 334 Aviador Ave., Millbrae, Calif. 94030
Filed Mar. 2, 1973, Ser. No. 337,288
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



234,056
AMPLIFIER
Shuhei Taguchi and Masaaki Miyamoto, Moriguchi, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 17, 1974, Ser. No. 461,765
Claims priority, application Japan Oct. 22, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 L

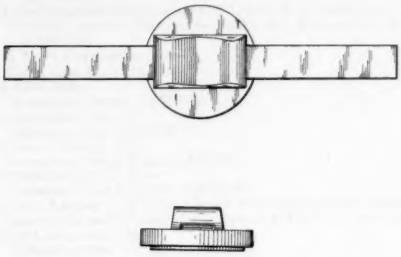


234,057
TYPEWRITER RIBBON SPOOL COVER
James J. Bienkowski, Cazenovia, and Joseph A. Rauch, Syracuse, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed Dec. 8, 1972, Ser. No. 313,205
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A



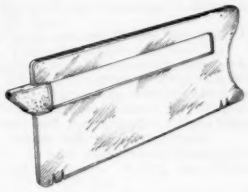
234,058
DESK SET OR THE LIKE
Alwin J. Stahel, New Brighton, Minn., assignor to Arthur Salm Inc., Chicago, Ill.
Filed Jan. 2, 1973, Ser. No. 319,992
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 B

234,059
WRIST HELD THERAPEUTIC MAGNETIC DEVICE
Charles G. Popp, 1712 S. Clifton Ave., Park Ridge, Ill. 60068, and James R. Popp, 510 Roberts Drive, Glenwood, Ill. 60425
Filed Nov. 17, 1972, Ser. No. 307,489
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 J



234,060
COMBINED POCKET HAIR COMB AND NAIL FILE
Guy W. Edmunds, Long Grove, Ill.
(152 Kimberly Road, East Dundee, Ill. 60118)
Filed Sept. 27, 1971, Ser. No. 184,319
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8

234,061
FRAME FOR MAKING FRINGE
Herman Milstein, Irving, Tex.
(18151 E. Valley Blvd., La Puente, Calif. 91744)
Filed May 17, 1973, Ser. No. 361,258
Term of patent 7 years
Int. Cl. D15—*06*
U.S. Cl. D92—15



234,062
DISPLAY PANEL
Thomas Strasser, New York, N.Y., assignor to Astra Products, Inc., Moonachie, N.J.
Filed June 14, 1972, Ser. No. 262,496
Term of patent 14 years
Int. Cl. D20—*03;* D6—*04*
U.S. Cl. D96—3

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF JANUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A B Kabi: *See—*
Jonsson, Nils Ake; Merenyi: Ferenc; and Westlund, Lars-Erik, 3,859,341.

A.G. fur industrielle Elektronik AGIE Losone b. Locarno: *See—*
Ullmann, Werner; Ferroni, Bernardo; and Schumacher, Bernd, 3,859,186.

A. O. Smith Corporation: *See—*
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A/S Atlas: *See—*
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AB Asea-Atom: *See—*
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AB Bahco Verktyg: *See—*
Brunosson, Bengt Bruno, 3,858,466.

AB Tekniska Fjadrar: *See—*
Comstedt, Tore Erik Karl, 3,858,699.

Abarotin, Eugene V., to United States Steel Corporation. Method of preparing the ends of cables for splicing. 3,858,302, Cl. 29-427.000.

Abbott Laboratories: *See—*
Goldstein, Alma W., 3,859,170.

Abe, Jinnosuke: *See—*
Morishita, Masataka; Inaba, Yoshihito; Kobari, Sadami; Fukushima, Mitsuru; and Abe, Jinnosuke, 3,859,228.

Abe, Katsuro; and Ono, Kozo, to Hitachi, Ltd. Radial piston type hydraulic pump or motor. 3,858,487, Cl. 91-488.000.

Abnett, Albert C.: *See—*
Foster, George B.; Cullen, Donald L.; and Abnett, Albert C., 3,858,983.

Accurate Wirecraft Company: *See—*
Baren, Louis, 3,858,835.

Action Industries, Inc.: *See—*
Salladay, Mack, 3,858,529.

Adachi, Kohei: *See—*
Tominaga, Hiroshi; Takamatsu, Masanobu; and Adachi, Kohei, 3,858,422.

Adams, Milton R., both of: *See—*
Jansen, Harvey B.; and Adams, Milton R., both of, 3,858,390.

Adamson, David L.: *See—*
Hood, Andrew G., III.; Adamson, David L.; Andersen, Terrell N.; and Richards, Kenneth J., 3,859,185.

Adcock, Alan. Apparatus for playing a board game. 3,858,885, Cl. 273-134.00B.

Addressograph-Multigraph Corporation: *See—*
Romig, John R., 3,859,088.

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Stengel, Edgar; and Emde, Friedhelm, 3,859,038.

Aerospace Corporation: *See—*
Pepper, Roger T.; and Kendall, Ernest G., 3,859,114.

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Becker, Manfred; Lapp, Otto; and Moisar, Erik, 3,859,093.
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Aguilo, Adolfo; and Schnizer, Arthur W., to Celanese Corporation. Process for the production of glycol esters. 3,859,336, Cl. 260-497.00A.

Aignesberger, Alois; Rosenbauer, Hans-Gunter; and Hiendl, Heriberg, to Suddeutsche Kalkstickstoff-werke AG; and Hifra La Loche S. ar. l. Extruded molded articles and process for the production thereof. 3,859,316, Cl. 260-395.00B.

Aihara, Seitaro: *See—*
Muto, Kiyoshi; Yamamoto, Yasuhisa; Toyoda, Yoshinori; Azemi, Shozo; Okano, Shigeru; Masuyama, Kenya; Aihara, Seitaro; Ito, Takao; Ogawa, Isamu; and Harada, Mitsumasa, 3,858,318.

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Akzona Incorporated: *See—*
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Alan I W Frank Corporation, The: *See—*
Fulton, Edward W., 3,858,756.

Albani, Peter E., to Avco Corporation. Method of making inserts for cooled turbine blades. 3,858,290, Cl. 29-156.80H.

Albers, Bernd: *See—*
Mrozek, John W.; and Albers, Bernd, 3,858,672.

Albright, James A.: *See—*
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Alden, John R.: *See—*
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Alexander, L. Bruce: *See—*
Rohm, Robert F.; and Alexander, L. Bruce, 3,858,500.

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Kushnarenko, Sergei Grigorievich; Kononenko, Vadim Grigorievich; Kollerov, Vyacheslav Viktorovich; Morgolenko, Anatoly Sergeevich; Alimochkin, Vladimir Mikhailovich; Orekhov, Albert Ivanovich; Komendantov, Jury Mikhailovich; Vasilchenko, Lev Petrovich; Parkhomenko, Nikolai Mikhailovich; and Anistarov, Nikolai Nikolaevich, 3,858,430.

Allard, John J., to AMF Incorporated. Ground fault interrupter circuit with excited secondary winding on differential transformer. 3,859,567, Cl. 317-18.00D.

Allen, Edward L., to Ingersoll-Rand Company. Wire wrapping tool. 3,858,295, Cl. 29-203.0DT.

Allen, Francis Edwin, to Letson and Burpee Ltd. Log feed conveyor for bandmill. 3,858,713, Cl. 198-200.000.

Allen & Hansburys Limited: *See—*
Hallworth, Gerald Wynn; and Smith, Sidney William, 3,858,583.

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Allette, Michael P., to Weber-Knapp Company. Safety system for machines. 3,858,472, Cl. 83-397.000.

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Anderson, L. Ray; Fox, William B.; Hardin, Charles V.; and Ratcliffe, Charles T., 3,859,361.
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Bailey, Maurice E.; Spaunburgh, Richard G.; and Davison, Raymond B., 3,859,323.
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Allington, Robert William, to Instrumentation Specialties Company. Optical system. 3,859,539, Cl. 250-575.000.

Allsup, Harvey C., Jr., to LTV Aerospace Corporation. Vehicle steering mechanism. 3,858,523, Cl. 104-247.000.

Alsina, Luis Gutierrez, to Barreiros Hnos, S.A. Financiera Alcala. Process for preventing melanosis in shellfish. 3,859,450, Cl. 426-268.000.

Altherr, Russell George, to AMSTED Industries Incorporated. Railway coupler shank keyslot contour. 3,858,729, Cl. 213-64.000.

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Francis, Thomas L.; and MacZura, George, 3,859,427.
Stokes, John J., Jr.; and Benish, Charles A., 3,858,319.

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American Home Products Corporation: *See—*
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AMF Corporation: *See—*
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AMF Incorporated: *See—*
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AMP Incorporated: *See—*
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Kunkle, John Philip; and Smith, Robert E., 3,858,960.

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Andersen, Terrell N.: *See—*
Hood, Andrew G., III.; Adamson, David L.; Andersen, Terrell N.; and Richards, Kenneth J., 3,859,185.

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Anderson, Othel E.: *See—*
Brock, Bob J.; and Anderson, Othel E., 3,858,715.

Anderson, Raymond E.: *See—*
Augustine, Carroll F.; and Anderson, Raymond E., 3,859,660.

Anderson, Richard B.: *See—*
Fuehrer, Reece R.; and Anderson, Richard B., 3,858,459.

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Anistarov, Nikolai Nikolaevich: *See—*
Kushnarenko, Sergei Grigorievich; Kononenko, Vadim Grigorievich; Kollerov, Vyacheslav Viktorovich; Morgolenko, Anatoly Sergeevich; Alimochkin, Vladimir Mikhailovich; Orekhov, Albert Ivanovich; Komendantov, Jury Mikhailovich; Vasilchenko, Lev Petrovich; Parkhomenko, Nikolai Mikhailovich; and Anistarov, Nikolai Nikolaevich, 3,858,430.

Antargaz Societe Anonyme de Distribution de Gaz Liquides de Petrole: *See—*
Appolos, Claude, 3,858,600.

Anthony, William H.; and Rasmussen, Thomas S., to Swiss Aluminium Ltd. Corrosion resistant aluminum composite material. 3,859,058, Cl. 29-191.000.

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Anthony's Manufacturing: *See—*
Heaney, James J., 3,859,502.

Aono, Shigeo, to Nissan Motor Company Limited. Electronic fuel injection control system. 3,858,561, Cl. 123-32.0EA.

Aono, Yukinaga: *See—*
Ohrui, Tetsuya; Sakakibara, Yasuhito; Aono, Yukinaga; Kato, Michio,; Takao, Hiroshi; and Ayano, Masami, 3,859,175.

Apcom, Inc.: *See—*
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APL Enterprises, Inc.: *See—*
Denton, Howard M.; and Slagle, Martin Luther, 3,858,984.

Apollo Lasers Inc.: *See—*
Riley, Lance W., 3,858,963.

Applied Power Inc.: *See—*
Miller, Douglas P., 3,858,431.

Appolos, Claude, to Antargaz Societe Anonyme de Distribution de Gaz Liquides de Petrole. Connection apparatus for fitting to the frame of a camping gas stove. 3,858,600, Cl. 137-322.000.

Ara, Inc.: *See—*
Mazelsky, Bernard, 3,858,863.

Araki, Kazuhiko: *See—*
Nakanishi, Michio; Shiroki, Masami; Tahara, Tetsuya; and Araki, Kazuhiko, 3,859,275.

Arbman Development AB: *See—*
Horn, John Gerhard; and Melin, John A., 3,858,347.

Arcesi, Joseph A.: *See—*
Petropoulos, Constantine C.; Arcesi, Joseph A.; and Ryan, Raymond W., 3,859,099.

ARCO Polymers, Inc.: *See—*
Immel, Richard H.; Dankocsik, George M.; and Galizia, Eugene V., 3,859,404.

Arenco-P.M.B. N.V.: *See—*
Maas, Henrious Johannes, 3,858,593.

Armco Steel Corporation: *See—*
Baker, William J., 3,858,607.
Denhard, Elbert E., Jr.; and Gaugh, Robert R., 3,859,082.
Randall, George W., 3,858,860.

Armstrong, Ernie R.; and Wood, Laurence H. Adjustable template for supporting and aligning tower footings. 3,858,866, Cl. 269-46.000.

Arn. Kiekert Sohne: *See—*
Kleefeld, Frank; and Gmeiner, Gunter, 3,858,919.

Arnold, Edward S., to Raymond Lee Organization, Inc., The. Test socket for studded semi conductors. 3,858,959, Cl. 339-74.00R.

Arnold's Auto Upholstery, Inc.: *See—*
Norris, Floyd E., 3,858,937.

Arthur D. Little, Inc.: *See—*
Perron, Robert R.; and Fowler, John T., 3,859,634.

Artos Engineering Company: *See—*
Gudmestad, Ragnar, 3,858,292.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Fukumi, Hirokazu; Itoh, Hirataka; Itoh, Koryo; and Usubuchi, Yutaka, 3,859,342.
Kai, Tsunetoshi; Inoue, Mitsuhiro; Yoshida, Matuo; and Ueda, Jun-ichi, 3,858,510.

Asahidenka Kogyo Kabushiki Kaisha: *See—*
Yamamoto, Hiroaki; Harada, Hideo; Miyaoka, Hiroshi; Tanaka, Minoru; Kubota, Osamu; Nakamura, Shizuo; and Nakamura, Yasusi, 3,859,367.

Ashe, John B.; Berry, Peter F.; and Hall, James D., to Texas Nuclear Corporation. Method and apparatus for fluorescent x-ray analysis. 3,859,525, Cl. 250-273.000.

Askins, Jack. Loudspeaker system which produces stereo-like sounds. 3,858,679, Cl. 181-145.000.

Atherton, David L., to Canadian Patents and Development Limited. Magnetic levitation guidance system. 3,858,521, Cl. 104-148.0SS.

Atherton, John Heathcote, to Imperial Chemical Industries Limited. Fluorine-containing organosilicon compounds. 3,859,320, Cl. 260-448.20N.

Atkarsky, Anatoly Alexandrovich: *See—*
Smirnov, Mikhail Dmitrievich; Sergeev, Ivan Demyanovich; Brod, Ilya Iosifovich; Kharman, Mikhail Nikolaevich; Puzynya, Leonid Vasilievich; Veinberg, Ikhil Abramovich; Zakharova, Ekaterina Georgievna; Lapshin, Vladimir Pavlovich; Kitaeva, Valentina Vasilievna; Petrov, Leonid Alexandrovich; Kukushkin, Vladimir Maximovich; Stukalov, Vladimir Nikolaevich; Smirnov, Pavel Mikhailovich; Novokreschenov, Viktor Timofeevich; Shushkevich, Eduard Nikolaevich; Atkarsky, Anatoly Alexandrovich; Okun, Boris Davydovich; Karasik, Vladimir Zakharovich; and Khodosova, Vera Nikolaevna, 3,858,263.

Atoji, Nobuhisa: *See—*
Yoshimura, Hisashi; and Atoji, Nobuhisa, 3,858,307.

Atwater, Julian G., to Swift and Company. Method and apparatus for delivering damp, granular solids. 3,858,714, Cl. 198-213.000.

Auclair, Gordon L.: *See—*
Fox, Clyde E.; and Auclair, Gordon L., 3,858,882.

Auer, Eberhard: *See—*
Kandler, Joachim; Merkenich, Karl; Henning, Klaus; Vogt, Wilhelm; Auer, Eberhard; and Glaser, Hermann, 3,859,224.

Augustine, Carroll F.; and Anderson, Raymond E., to Midwest Microwave, Inc. Doppler radar for land vehicles. 3,859,660, Cl. 343-9.000.

Autech Corporation: *See—*
Foster, George B.; Cullen, Donald L.; and Abnett, Albert C., 3,858,983.

Automatic Electronic Systems: *See—*
Matthews, Solomon Bertram, 3,859,472.

Avco Corporation: *See—*
Albani, Peter E., 3,858,290.
Luthman, Paul A.; and Fischer, Thomas R., 3,858,809.

Averill, Robert L., to Boeing Company, The. Hard flush airplane shelter. 3,858,371, Cl. 52-66.000.

Ayano, Masami: *See—*
Ohrui, Tetsuya; Sakakibara, Yasuhito; Aono, Yukinaga; Kato, Michio,; Takao, Hiroshi; and Ayano, Masami, 3,859,175.

Azemi, Shozo: *See—*
Muto, Kiyoshi; Yamamoto, Yasuhisa; Toyoda, Yoshinori; Azemi, Shozo; Okano, Shigeru; Masuyama, Kenya; Aihara, Seitaro; Ito, Takao; Ogawa, Isamu; and Harada, Mitsumasa, 3,858,318.

AZS Corporation: *See—*
Zvejnieks, Andrejs, 3,859,270.

Azuma, Nobuhiro, to Kokusai Denshin Denwa Kabushiki Kaisha. Device for feeding a printer head. 3,858,702, Cl. 197-1.00R.

Azzarelli, Teodoro: *See—*
Proudian, Andrew P.; Azzarelli, Teodoro; and Welkowsky, Murray Samuel, 3,859,529.

B. F. Goodrich Company: *See—*
Kuts, Mathew, 3,858,474.

Baba, Takeo: *See—*
Misato, Tomomasa; Suzuki, Toshiyuki; Nakagawa, Taizo; Ohmori, Kaoru; Baba, Takeo; Ishida, Shuichi; and Ishii, Junichi, 3,859,444.

Bachofer, Henry L., to Sun Oil Company of Pennsylvania. Drum filling overflow cut-off apparatus. 3,858,629, Cl. 141-227.000.

Bachofner, Peter: *See—*
Chaudhuri, Kiranendu; and Bachofner, Peter, 3,859,184.

Backman, Wong, to Standard-Thomson Corporation. Thermally responsive valve apparatus. 3,858,801, Cl. 236-34.000.

Backstrom, Melvin L., to GTE Sylvania Incorporated. Manufacture of electrical contact materials. 3,859,087, Cl. 75-213.000.

Baggaley, Jack, to Beloit Corporation. Stock cleaner and method. 3,859,206, Cl. 209-17.000.

Baguet, Paul, to Compagnie D'Etudes et de Participations Industrielles. Process and tank for the patenting of metal wires. 3,858,859, Cl. 266-3.00R.

Bahl, James Melvin; Moon, Seaton; and Magruder, Michael Keith, to Deere & Company. Control mechanism having means compensating for relative limited movement between a pair of related structures. 3,858,456, Cl. 74-491.000.

Bahnsen, Erwin B., to Steiner American Corporation. Continuous towel dispenser. 3,858,952, Cl. 312-38.000.

Bahnsen, Erwin B., to Steiner American Corporation. Towel dispenser. 3,858,953, Cl. 312-38.000.

Bailey, Edward A.; Fish, Walter D.; and Pertusio, Rene. Continuous rotation rock drill. 3,858,666, Cl. 173-59.000.

Bailey, Floyd Leroy, to Allied Chemical Corporation. Control of subterranean termites. 3,858,346, Cl. 43-124.000.

Bailey, James R.: *See—*
Klein, Carl F.; and Bailey, James R., 3,859,656.

Bailey, Maurice E.; Spaunburgh, Richard G.; and Davison, Raymond B., to Allied Chemical Corporation. Preparation of 4,4'-methylenebis (cyclohexylisocyanate). 3,859,323, Cl. 260-453.0PH.

Bailey, Wallace O.; McMurtry, Carl H.; and Miccioli, Bruno R., to Carborundum Company, The. Dense composite ceramic bodies and method for their production. 3,859,399, Cl. 264-29.000.

Baird-Atomic, Inc.: *See—*
Miles, John L., 3,859,131.
Westell, William E., 3,859,460.
Baird, Kenneth M.; Dobrowolski, Jerzy A.; Waldorf, Allan J.; and Carman, Philip D., to Canadian Patents and Development Limited. Optical interference authenticating means. 3,858,977, Cl. 356-71.000.
Baker, Don R., to Stauffer Chemical Company. O-(halophenylcarbamyl)-n-(halophenyl) glycolamides. 3,859,332, Cl. 260-471.00C.
Baker Perkins Inc.: *See—*
Fischer, Harry A.; Dietzel, Kenneth; Cronk, Vern V.; and Stimpson, Dale E., 3,858,545.
Gendron, Roger J.; and Plant, Harvey E., 3,859,022.
Baker, Rowland; and Norton, Gordon, to Balaeva Group Limited (formerly Seaward Structures International), The. Oil storage terminals. 3,858,402, Cl. 61-46.500.
Baker, Terry M., to Rolair Systems, Inc. Control system for air cushion transporter. 3,858,832, Cl. 246-182.00R.
Baker, William J., to Armco Steel Corporation. Three-way, two-position diverter valve. 3,858,607, Cl. 137-625.500.
Baksht, Mikhail Vladimirovich: *See—*
Botvinnik, Mikhail Moiseevich; Shakaryan, Jury Gevondovich; Dovganjuk, Ivan Yakovlevich; Klimov, Boris Petrovich; Zhuchkov, Mikhail Ivanovich; Borzyak, Jury Gordeevich; Tjufilin, German Mikhailovich; Baksht, Mikhail Vladimirovich; Blotsky, Nikolai Nikolaevich; Plotnikova, Tatyana Vasilievna; and Filichev, Oleg Nikolaevich, 3,859,578.
Balaeva Group Limited (formerly Seaward Structures International), The: *See—*
Baker, Rowland; and Norton, Gordon, 3,858,402.
Baldwin-Gegenheimer Corporation: *See—*
Brym, Stanley J., 3,858,602.
Baliga, Janardhana B.; and Dainton, Robert L., to du Pont de Nemours, E. I., and Company. Polyamide feed yarn for false-twist texturing, process of false-twist texturing, and product thereof. 3,858,387, Cl. 57-140.00R.
Ballentine, Earle W. Centrifugal blower. 3,859,009, Cl. 416-186.000.
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., to Olinkraft, Inc. Disposable paint tray. 3,858,787, Cl. 229-34.00R.
Banjeglav, George Milan, to Interlake, Inc. Strap tension tool. 3,858,625, Cl. 140-123.600.
Banyas, John D.; and Wallington, Frederick L., to Owens-Illinois Inc. Container handling apparatus. 3,858,709, Cl. 198-20.00R.
Baratti, Mario. Vehicle engine oil temperature pressure and metal detecting device. 3,859,626, Cl. 340-52.00F.
Barckhausen, Raymond, to Societe Generale D'Enterprises. Vertical, multistage-flash, falling film column for distilling brine. 3,859,173, Cl. 202-173.000.
Bard, Douglas C.; and Bard, Elmer H., to Beatrice Foods Co. Vacuum assembly. 3,858,272, Cl. 16-115.000.
Bard, Elmer H.: *See—*
Bard, Douglas C.; and Bard, Elmer H., 3,858,272.
Baren, Louis, to Accurate Wirecraft Company. Adjustable laboratory glassware funnel support. 3,858,835, Cl. 248-94.000.
Barker, John P., to American Olean Tile Company. Grout composition. 3,859,233, Cl. 260-17.00R.
Barker, Maynard C. Conveying arrangement for containers. 3,858,711, Cl. 198-52.000.
Barnes-Hind Diagnostics, Inc.: *See—*
Turner, Lloyd S.; and Vaughan, Daniel G., 3,858,739.
Barnes, Lyle K.; and Jacobsen, J. Kenneth, to Milton Roy Company. Apparatus for the measurement of the oxygen content of a gas stream. 3,859,192, Cl. 204-195.00S.
Barreiros Hnos, S.A. Financiera Alcala: *See—*
Alsina, Luis Gutierrez, 3,859,450.
Barrett, Frederick, to Electricity Council, The. Electrodeposition apparatus. 3,859,194, Cl. 204-208.000.
Barth, Rudolph; and Jaeger, Oskar, to Behringwerke Aktiengesellschaft. Process of inactivating rabies virus. 3,859,168, Cl. 195-1.200.
Bartz, Gunter, to Ernst Leitz GmbH. Apparatus for imparting contrast to a microscope object. 3,859,535, Cl. 250-542.000.
Basche, Malcolm; and Kuntz, Urban E., to United Aircraft Corporation. Method for producing nickel alloy bonding foil. 3,859,144, Cl. 148-6.300.
Bass, Michael; Dwyer, Richard M.; and Haverback, Bernard J., to University of Southern California. Fiber optic laser light delivery system. 3,858,577, Cl. 128-8.000.
Battiston, Louis; Niessen, Paul; Wellington, John R.; and Watson, Thorpe E., to Cominco Ltd. Apparatus for delivering metal to a rotating continuous casting drum. 3,858,642, Cl. 164-276.000.
Bauer, Friedrich; Berger, Karl; and Hrabal, Hans, to Hoerbiger Ventilwerke. Lamellar valve. 3,858,605, Cl. 137-512.150.
Bauer, Laurence M.; and Krzyston, Michael J., to said Bauer, by said Krzyston. Interest-paying savings bank. 3,858,701, Cl. 194-1.00F.
Bauer, Laurence M.: *See—*
Bauer, Laurence M.; and Krzyston, Michael J. (assors. to said Bauer, by said Krzyston), 3,858,701.
Bauman, Jack. Scalp anchor for hairpiece. 3,858,247, Cl. 3-1.000.
Baurose, Erik: *See—*
Browne, Warren G.; and Baurose, Erik, 3,858,377.
Bayer Aktiengesellschaft: *See—*
Breer, Karl; and Nadolski, Klaus, 3,858,852.
Hocker, Jurgen; and Merten, Rudolf, 3,859,299.
Kishino, Shigeo; Kudamatsu, Akio; Sumi, Shozo; and Shiokawa, Kozo, 3,859,393.
Stieler, Werner; Oelmeyer, Rolf; Haupt, Heinrich; and Vernaleken, Hugo, 3,859,245.
Beard, Edward S.; and Kirkner, Rodney H., Jr. Single or double roll mechanism for cloth wind up. 3,858,821, Cl. 242-66.000.
Beasley, Robert Malcolm; Harman, David John; Mainard, Douglas Raymond; and Washington, Derek, to U.S. Philips Corporation. Apparatus for compressing a polygonal pack of optical fibers employing a plurality of slides with curved faces and a cage. 3,859,071, Cl. 65-11.00R.
Beatenbough, Paul K.; and Stocker, Alan F., to General Motors Corporation. Heated manifold with improved fuel retainer. 3,858,564, Cl. 123-122.0AB.
Beatrice Foods Co.: *See—*
Bard, Douglas C.; and Bard, Elmer H., 3,858,272.
Beaupoil, Claude Marc-Andre; and Hery, Jean-Francois. Individual device for the protection of lobsters or similar crustaceans during their growth. 3,858,554, Cl. 119-2.000.
Beck, Harold D.; and Hanna, Thomas L., to International Harvester Company. Fan shroud exit structure. 3,858,644, Cl. 165-51.000.
Becker, Manfred; Lapp, Otto; and Moisar, Erik, to Agfa-Gevaert Aktiengesellschaft. Fogged, direct positive emulsion containing composite silver halide grains protected with silver halide layer and the use thereof in reversal process. 3,859,093, Cl. 96-64.000.
Beckman Instruments, Inc.: *See—*
Luitwieler, Samuel H., Jr.; Klein, Paul R.; and Robinson, Dale Dario, 3,859,528.
Bednarski, Theodore M.; and Hauer, Harold, to Hercules Incorporated. Apparatus for coulometric stripping analysis. 3,859,193, Cl. 204-195.00H.
Beebe, Wayne M.; and Fayling, Richard E., to Minnesota Mining and Manufacturing Company. Data accumulation system providing magnetic toner powder recording. 3,858,514, Cl. 101-426.000.
Beekman Instruments, Inc.: *See—*
Luitwieler, Samuel H., 3,859,532.
Beer, Andrew E. Fitted bedclothes. 3,858,256, Cl. 5-334.00C.
Beermann, Claus; and Reuter, Martin, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Carbamido-alkylphosphinic acid alkyl esters. 3,859,392, Cl. 260-943.000.
Behne, Stephen G., to Chemetron Corporation. Rail grinding machine. 3,858,361, Cl. 51-80.00R.
Behringwerke Aktiengesellschaft: *See—*
Barth, Rudolph; and Jaeger, Oskar, 3,859,168.
Belart, Juan, to ITT Industries, Inc. Device for effecting a volume change in a hydraulic antiskid brake system. 3,858,945, Cl. 303-21.00F.
Beld, John W.; Kinninger, Warren G.; Klohr, Robert E. N.; and Byrne, Paul A., to Puritan-Bennett Corporation. Comprehensive infant care system. 3,858,570, Cl. 128-1.00B.
Bell & Howell Company: *See—*
Bradt, Gordon E.; Frystak, Richard; Mischenko, Nicholas; and Prelletz, Edward R., 3,858,829.
Collier, John Daniel, III, 3,858,970.
Schmidt, Josef, 3,859,140.
Bell, Jean, to Societe Generale de Constuctions Electrique et Mecaniques (ALSTHOM). Stop arrangement for drill turbines. 3,858,668, Cl. 175-107.000.
Bell, Stanley C.: *See—*
Santilli, Arthur A.; Scoiese, Anthony C.; and Bell, Stanley C., 3,859,315.
Bell Telephone Laboratories, Incorporated: *See—*
Clemons, Donald Gordon; and Schroeder, Paul Robert, 3,859,545.
Clemons, Donald Gordon; and Vogelsong, James Howard, 3,859,641.
Cook, Robert Wilcox, 3,859,636.
Danielsen, Daniel; and Ketchledge, Raymond Waibel, 3,859,471.
Dawson, Larry Ralph; Lorimor, Orval George; and Saul, Robert H., 3,859,148.
Dittrich, Robert George; and Thelemaque, Louis Emanuel, 3,859,470.
French, Ralph Clark, Jr.; and Utz, Edwin Peter, 3,858,736.
Joel, Amos Edward, Jr., 3,859,479.
Lang, David Vern, 3,859,595.
Logan, Ralph Andre; and Miller, Barry Irwin, 3,859,178.
Mar, Jerry, 3,859,642.
Reed, Ray Allen, 3,859,583.
Smith, Nicholas Kimbrough; and Truesdale, James Bartel, 3,859,468.
Wadlington, James Carroll, 3,859,586.
Beloit Corporation: *See—*
Baggaley, Jack, 3,859,206.
Crouse, Jere W., 3,858,820.
Ben-Zvi, Emanuel, to International Environmental Dynamics. Triaxially prestressed polygonal concrete members. 3,858,374, Cl. 52-223.000.
Bender, John H., Jr.; Jeffries, Dorval D.; Ekberg, Ethen L.; and Waldschmidt, Leo A. Automatic in-line valve having multiple conical valve sections. 3,858,604, Cl. 137-488.000.
Bendix Corporation, The: *See—*
Kautz, Robert F.; Bourgeault, Leo B.; and Lane, Raymond G., 3,859,582.
Peterson, A. Duane, 3,858,308.
Bendle, William J., to General Motors Corporation. Catalytic converter filling apparatus. 3,858,628, Cl. 141-46.000.

Benham, Alvin L.; Drayer, Dennis E.; and McBride, Harold D., to Marathon Oil Company. Method for oxidizing hydrocarbons. 3,859,343, Cl. 260-524.00M.

Benish, Charles A.: *See—*
Stokes, John J., Jr.; and Benish, Charles A., 3,858,319.

Bennett, Walter Scott, to Burroughs Corporation. Apparatus for detecting and correcting errors in digital information organized into a parallel format by use of cyclic polynomial error detecting and correcting codes. 3,859,630, Cl. 340-146.1AL.

Benson, Clark K.; Caridis, Andrew A.; and Nilsen, Arthur A., to Heat and Control, Inc. Batter applying machine. 3,858,546, Cl. 118-16.000.

Benson, Paul R.: *See—*
Carman, Richard J.; and Benson, Paul R., 3,858,598.

Berberich, Bertold, to Siemens Aktiengesellschaft. Electric switch for aerodynamic acceleration of a plasma. 3,859,487, Cl. 200-144.00R.

Beregi, Laszlo; Hugon, Pierre; Duhault, Jacques; and Poignant, Jean-Claude, to Science Union Et Cie, Societe Francaise De Recherche Medicale. Phenylalanine compounds. 3,859,273, Cl. 260-239.0BF.

Berg, Knut, to Aktiebolaget Svenska Flaktfabriken. Making continuous joint between flat sheets. 3,858,540, Cl. 113-54.000.

Berg Manufacturing Company, The: *See—*
Klimek, Boleslaw, 3,858,610.

Berg, Roy E., to Interstate Utilities Corporation. System for producing electric power and concurrently disposing of garbage and refuse. 3,858,534, Cl. 110-8.00R.

Berger, Guenter W., to Farmer Bros. Co. Coffee brewing system. 3,858,569, Cl. 126-344.000.

Berger, Karl: *See—*
Bauer, Friedrich; Berger, Karl; and Hrabal, Hans, 3,858,605.

Berger, Maurice Francis: *See—*
Craven, George Frederick; Thomas, Raymond Richard; and Berger, Maurice Francis, 3,859,600.

Bergfelt, Nils H. Coating machine having an adjustable rotation system. 3,858,547, Cl. 118-49.000.

Beriger, Ernest, to Ciba-Giegy Corporation. Thiolphosphoric acid esters. 3,859,391, Cl. 260-942.000.

Berkowitz, Nathan L.: *See—*
Sallis, Dwight L.; and Berkowitz, Nathan L., 3,858,420.

Bernold, Jean. Method of tunnel boring and tunnel reinforcement mats. 3,858,400, Cl. 61-45.00R.

Berrera, Robert Gonzalez: *See—*
Rubio, Manuel Jesus, 3,859,449.

Berry, Peter F.: *See—*
Ashe, John B.; Berry, Peter F.; and Hall, James D., 3,859,525.

Berry, Ronald, to Rockwell International Corporation. Method of supporting main girt. 3,858,619, Cl. 139-1.00R.

Besing, Wayne L., to Whirlpool Corporation. Refrigerator construction. 3,858,409, Cl. 62-285.000.

Best, Donald T.; and Tidd, Thomas J., to Sperry Rand Corporation. Multichannel transducer with glass support elements. 3,859,663, Cl. 360-121.000.

Bethlehem Steel Corporation: *See—*
Giles, Philip M.; and Marder, Arnold R., 3,859,079.
Townsend, Herbert E., 3,859,116.

Beyer, James N.; Moore, Earl P., Jr.; and Rusher, Robert L., to du Pont de Nemours, E. I., and Company. Refractory laminate having improved green strength. 3,859,153, Cl. 161-182.000.

Bialous, Charles A.; and Jaquiss, Donald B. G., to General Electric Company. Thermal oxidatively stable polycarbonate composition. 3,859,248, Cl. 260-45.80A.

Billingslea, Elmer O., Jr. Rolled hat brim shaping device. 3,858,769, Cl. 223-84.000

Bilow, Norman, to Hughes Aircraft Company. Process for producing terephthalohydroximoyl chloride. 3,859,353, Cl. 260-566.00A.

Binard, William J.; and Dye, John F., to Kendall Company, The. Insufflation device. 3,858,572, Cl. 128-2.00A.

Bintliff, Lee I.; and Sklarchuk, Jack C., to ESB Incorporated. Process for making thin, microporous fluorocarbon polymer sheet material. 3,859,402, Cl. 264-49.000.

Bir, Wallace G.: *See—*
Novack, Joseph; and Bir, Wallace G., 3,859,268.

Birch, Michael J.: *See—*
Hartmann, Clinton S.; and Birch, Michael J., 3,859,608.

Birkner, Udo; and Fritsch, Gunter, to Blaupunkt-Werke GmbH. Loudspeaker and attachment fitting. 3,859,480, Cl. 179-178.000.

Bison Manufacturing Company, Inc.: *See—*
Selley, Wilbur Webb; and Schaffer, Richard H., 3,858,749.

Black, J. Oliver. Vegetable shredder. 3,858,815, Cl. 241-168.000.

Blackstone, Michael; Maddox, Bryant K.; Rowland, Bobby A.; and Tate, Stanley L., to Southwire Company. Method and apparatus for recovering insulation and conductor from scrap insulated wire. 3,858,776, Cl. 225-2.000.

Blamoutier, Michel; and Fraleux, Jean, to Thomson-CSF. Focussing device for electronic tubes. 3,859,613, Cl. 335-210.000.

Blanding, Wendell S.; and Brothers, Jack A., to Corning Glass Works. Method of manufacturing particles of uniform size and shape. 3,859,407, Cl. 264-62.000.

Blasing, Elmer Paul, Jr., to Formica Corporation. Melamine-formaldehyde resin containing 2-(2-aminoethoxy) ethanol. 3,859,243, Cl. 260-32.60N.

Blattner, Hans; and Schindler, Walter, deceased (by Gysin, Leonhard, executor), to Ciba-Geigy Corporation. 2,3-Dihydro-5 -trifluoromethyl-1h-dibenzo(2,3:6,7) thiepino (4,5-c) pyrroles as cns-depressants. 3,859,439, Cl. 424-274.000.

Blau KG Fabrik Fuer Kraftfahrzeugteile: *See—*
Gerdes, Theo, 3,858,751.

Blaupunkt-Werke GmbH: *See—*
Birkner, Udo; and Fritsch, Gunter, 3,859,480.

Blewett, Charles W.; and Rhodes, Philip H., to Emery Industries, Inc. Stabilized vinyl halide polymer compositions. 3,859,236, Cl. 260-23.0XA.

Blinkilde, Paul J.; and Sandi, Floyd J., to Essex International, Inc. Occupant sensor seat switch. 3,859,485, Cl. 200-85.00A.

Bloch, Herman S., to Universal Oil Products Company. Process for the preparation of alkaline sulfate esters of n-alkyl-substituted hydroxypolyalkoxymethylcyclohexenes. 3,859,324, Cl. 260-457.000.

Block, Bruce E.; and Kubinski, Alan F., to Rockford Automation Inc. Conveyor system. 3,858,707, Cl. 198-19.000.

Block Engineering, Inc.: *See—*
Hirschfeld, Tomas, 3,859,526.

Blomfield, Rodney A., to Diamond Shamrock Corporation. Process for bleaching goods during drycleaning. 3,859,044, Cl. 8-142.000.

Bloom, William G.: *See—*
Jahnsen, Vilhelm J.; Bloom, William G.; and Campen, Charles F., Jr., 3,859,209.

Blotsky, Nikolai Nikolaevich: *See—*
Botvinnik, Mikhail Moiseevich; Shakaryan, Jury Gevondovich; Dovganjuk, Ivan Yakovlevich; Klimov, Boris Petrovich; Zhuchkov, Mikhail Ivanovich; Borzyak, Jury Gordeevich; Tjufilin, German Mikhailovich; Baksht, Mikhail Vladimirovich; Blotsky, Nikolai Nikolaevich; Plotnikova, Tatyana Vasilievna; and Filichev, Oleg Nikolaevich, 3,859,578.

Boehringer Ingelheim G.m.b.H.: *See—*
Renth, Ernst Otto; Mentrup, Anton; Schromm, Kurt; and Giesemann, Rolf, 3,859,438.
Teufel, Helmut; Engel, Wolfhard; and Seeger, Ernest, 3,859,256.

Boeing Company, The: *See—*
Averill, Robert L., 3,858,371.

Boesel, Walter F., to Garrett Corporation, The. Detachable pole assembly for dynamo electric machine stator. 3,859,549, Cl. 310-218.000.

Boileau, Jacques, to Compagnie Generale des Establissements Michelin, raison sociale Michelin & Cie. Heavy-duty radial tire for use on and off the road. 3,858,633, Cl. 152-209.00R.

Bole, Pierre-Andre: *See—*
Eichenberger, Jurg; Perlhefter, Norbert; and Bole, Pierre-Andre, 3,859,076.

Bolt Beranek and Newman, Inc.: *See—*
Ver, Istvan L.; Danner, William D.; and Woitschatzke, Hans (said Ver assors. to), 3,858,894.

Bonavent, Gerard: *See—*
Thiery, Jean; Chatard, Michel; Huvey, Michel; and Bonavent, Gerard, 3,858,616.

Bond, Ronald L.; Daughdrill, E. C.; and Brice, Henry T., to Swacara, Inc. Solid waste collection and recovery system. 3,858,939, Cl. 298-8.00R.

Bonhomme, Francois Robert, to Connectronics Corporation. Electrical contact sockets with incluned elastic wires and in methods for their manufacture. 3,858,962, Cl. 339-256.000.

Bonner, Joseph A.: *See—*
Evans, Howard J.; Lofink, Joseph B.; and Bonner, Joseph A., 3,858,448.

Bono, Luigi, to NECCHI Society per Azioni. Lubricating device in compressors for refrigerators. 3,858,685, Cl. 184-6.160.

Bontrager, Harris W.; and Spector, George. Folding cart - baggie cart. 3,858,899, Cl. 280-36.00R.

Booher, Richard N.; and Pohland, Albert, to Eli Lilly and Company. Preparation of 1-methyl-3,3-diphenyl-4-hydroxyhexylamine salts and o-acyl derivatives thereof. 3,859,354, Cl. 260-570.00R.

Boone, Richard B. Portable traffic sign and base therefor. 3,858,997, Cl. 404-10.000.

Borel, Henry B. Jackscrew device. 3,858,300, Cl. 29-256.000.

Bores, John F. Truck bumper guide. 3,858,924, Cl. 293-69.000.

Borg-Warner Corporation: *See—*
Hoppesch, Joseph P.; Padgitt, Kenneth W.; and Ward, Donald H., 3,858,434.
Tuzson, John J., 3,859,516.
Wiese, Winfred J., 3,858,890.

Borgstrom, Gert Ove; and Ghisler, Walter, to Telefonaktiebolaget L M Ericsson. Method of operating file gates in a gate matrix. 3,859,467, Cl. 179-15.0BY.

Borin, Harlan F. Cup with self-sealing spout. 3,858,767, Cl. 222-494.000.

Borrelli, Nicholas F., to Corning Glass Works. Optical sensing of cylindrical magnetic domains. 3,859,643, Cl. 340-174.0YC.

Borzyak, Jury Gordeevich: *See—*
Botvinnik, Mikhail Moiseevich; Shakaryan, Jury Gevondovich; Dovganjuk, Ivan Yakovlevich; Klimov, Boris Petrovich; Zhuchkov, Mikhail Ivanovich; Borzyak, Jury Gordeevich; Tjufilin, German Mikhailovich; Baksht, Mikhail Vladimirovich; Blotsky, Nikolai Nikolaevich; Plotnikova, Tatyana Vasilievna; and Filichev, Oleg Nikolaevich, 3,859,578.

Bose Corporation: *See—*
Veranth, Joseph L.; and Poulo, Louis, 3,859,570.

Bose, Fritz-Rainer; Hornei, Kurt; and Essmann, Wolfgang, to MIAG Muehlenbau und Industrie GmbH. Apparatus for the production and pneumatic conveying of a continual flow of portions of loose material. 3,858,943, Cl. 302-26.000.

Bosley, Denis V.: *See—*
Summerfield, William F.; Plizzotto, Joseph F.; and Bosley, Denis V., 3,858,872.

Botvinnik, Mikhail Moiseevich; Shakaryan, Jury Gevondovich; Dovganjuk, Ivan Yakovlevich; Klimov, Boris Petrovich; Zhuchkov, Mikhail Ivanovich; Borzyak, Jury Gordeevich; Tjufilin, German Mikhailovich; Baksht, Mikhail Vladimirovich; Blotsky, Nikolai Nikolaevich; Plotnikova, Tatyana Vasilievna; and Filichev, Oleg Nikolaevich. Method and circuit for controlling an asynchronized-synchronous machine. 3,859,578, Cl. 318-197.000.

Bouchard, Robert Joseph; and Sleight, Arthur William. Semiconducting metal oxides with the cubic $KSBO_3$ crystal structure. 3,859,232, Cl. 252-519.000.

Boucherie, Leonel P., to G.B. Boucherie, naamloze vennootschap, Firma. Automatic drum type machine for the manufacture of brushes. 3,858,941, Cl. 300-3.000.

Boudreau, John J., Jr., deceased (by Boudreau, Phyllis V., administratrix). Concrete fastener. 3,858,478, Cl. 85-10.00E.

Boudreau, Phyllis V., administratrix: *See—*
Boudreau, John J., Jr., deceased, 3,858,478.

Bourat, Guy; and Margraff, Rodolphe, to Rhone-Poulenc S.A. Polyoxetanes with sulphonic acid groups. 3,859,253, Cl. 260-49.000.

Bourgeault, Leo B.: *See—*
Kautz, Robert F.; Bourgeault, Leo B.; and Lane, Raymond G., 3,859,582.

Bourges, Bernard, to Societe Anonyme: Poclain. Device for feeding a hydraulic load element mounted on a telescopic structure, by means of two jacks. 3,858,396, Cl. 60-698.000.

Bourne, Lewis L. Multi-purpose carousel. 3,858,871, Cl. 272-30.000.

Bouy, Pierre; and Collard, Daniel, to Rhone-Progil. Bipolar electrodes. 3,859,197, Cl. 204-284.000.

Bower, Ray B. Conduit joint assembly. 3,858,912, Cl. 285-230.000.

Bowman, Grover L. Apparatus for plugging holes in bowling balls. 3,858,839, Cl. 249-90.000.

Boyer, Jean-Jacques. Press for treating household refuse. 3,858,504, Cl. 100-74.000.

Boyer, John A.; Ludwig, David P.; and Zwickel, Friedrich, to Western Electric Company Incorporated. Loading of compliant tape. 3,858,721, Cl. 206-330.000.

BP Chemicals International Limited: *See—*
Camm, Richard John; and Green, Howard Stanton, 3,859,346.

Brad Ragan, Inc.: *See—*
Morgan, Harvey E., 3,859,054.

Bradatsch, Edmund: *See—*
Lau, Gunther; Bradatsch, Edmund; and Brandl, Hermann J., 3,858,550.

Bradford, John Guythar. Safety sled. 3,858,897, Cl. 280-17.000.

Bradt, Gordon E.; Frystak, Richard; Mischenko, Nicholas; and Prelletz, Edward R., to Bell & Howell Company. Cartridge for a coil of flexible strip material. 3,858,829, Cl. 242-197.000.

Brandell, John R. Switch with housing having lead wire provisions. 3,859,492, Cl. 200-293.000.

Brandl, Hermann J.: *See—*
Lau, Gunther; Bradatsch, Edmund; and Brandl, Hermann J., 3,858,550.

Brannock, Kent C.: *See—*
Dietl, Hans K.; and Brannock, Kent C., 3,859,310.

Brass Craft Manufacturing Company: *See—*
Karie, Earl K.; and Kuttruff, Manfred K., 3,858,914.

Brattstrom, Lars Erik, to Spanset Inter A.G. Tightening and securing device for strapping. 3,858,279, Cl. 24-68.00F.

Braun Aktiengesellschaft: *See—*
Mohr, Walter, 3,859,037.

Brautigam, Donald Roger, to Stolle Corporation, The. Easy-open can end. 3,858,753, Cl. 220-273.000.

Brazelton, Bruce H., to Telonic Industries, Inc. Sweep generator with crystal controlled center frequency. 3,859,607, Cl. 331-178.000.

Brazier, Robert L., to Sangamo Electric Company. Electrolytic capacitor with improved header and method of making same. 3,859,574, Cl. 317-230.000.

Breer, Karl; and Nadolski, Klaus, to Bayer Aktiengesellschaft. Machine for intermittently filling moulds or cavities with a reactive plastics-forming, more particularly foam-forming mixture. 3,858,852, Cl. 259-4.000.

Brenneman, J. Edward; and Waters, Robert S., to Schick Incorporated. Drive assembly for an electric shaver. 3,858,314, Cl. 30-43.920.

Brescia, Anthony J., to Rubbermaid Commerical Products, Inc. Tilt truck frame with removable tub. 3,858,929, Cl. 280-47.120.

Breslow, David S., to Hercules Incorporated. Azides. 3,859,261, Cl. 260-79.30R.

Bret, Pierre; and Suck, Catherine, to Societe Lablabo. Liquid delivery valve construction. 3,858,771, Cl. 222-402.200.

Breuer, Hermann, to E. R. Squibb & Sons, Inc. Acylthiomethyl esters of penicillins. 3,859,274, Cl. 260-239.100.

Brewer, Robert W.; and Phillips, Danny R., to General Motors Corporation. Viscous fluid clutch with supplementing centrifugal clutch. 3,858,697, Cl. 192-58.00B.

Brewster, Arthur Edward, to International Standard Electric Corporation. Infrared detection system. 3,859,530, Cl. 250-334.000.

Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, to Firestone Tire & Rubber Company, The. Tire fabric cutter. 3,859,152, Cl. 156-88.000.

Brice, Henry T.: *See—*
Bond, Ronald L.; Daughdrill, E. C.; and Brice, Henry T., 3,858,939.

Bridgestone Tire Co., Ltd.: *See—*
Nakamoto, Yuzuru; Kubota, Eishi; Sakamoto, Kazuhiko; Okuda, Koji; Imamura, Takaaki; Sano, Shigeshia; and Suzuki, Fukushi, 3,858,635.

Briggs, Stanley E. Irrigation pipe handling apparatus. 3,858,731, Cl. 214-1.0PA.

British Columbia Research Council: *See—*
Cuthbert, Robert M., 3,859,522.

British Titan Limited: *See—*
Wiseman, Thomas James; and Howard, Peter Barry, 3,859,109.
Wiseman, Thomas James; and Howard, Peter Barry, 3,859,115.

Broadbent, H. Smith: *See—*
Parish, Walter Wesley; and Broadbent, H. Smith, 3,859,287.

Brock, Bob J.; and Anderson, Othel E. Shackle cleaning device. 3,858,715, Cl. 198-229.000.

Brockett, Bruce W., to National Cash Register Company, The. Production of pressure-rupturable hydrophilic-walled microcapsules having water-soluble color-forming reactant material in solution in the core. 3,859,229, Cl. 252-316.000.

Brockway Glass Company, Inc.: *See—*
Snyder, Herbert C., 3,859,118.

Brod, Ilya Iosifovich: *See—*
Smirnov, Mikhail Dmitrievich; Sergeev, Ivan Demyanovich; Brod, Ilya Iosifovich; Kharman, Mikhail Nikolaevich; Puzynya, Leonid Vasilievich; Veinberg, Ikhil Abramovich; Zakharova, Ekaterina Georgievna; Lapshin, Vladimir Pavlovich; Kitaeva, Valentina Vasilievna; Petrov, Leonid Alexandrovich; Kukushkin, Vladimir Maximovich; Stukalov, Vladimir Nikolaevich; Smirnov, Pavel Mikhailovich; Novokreschenov, Viktor Timofeevich; Shushkevich, Eduard Nikolaevich; Atkarsky, Anatoly Alexandrovich; Okun, Boris Davydovich; Karasik, Vladimir Zakharovich; and Khodosova, Vera Nikolaevna, 3,858,263.

Bronkhorst, Armand Francois; and Wurdemann, Wilhelm Ludwig Heinrich Ernst, to Holvrieka International N.V. Process for draining and densifying cheese curd. 3,859,453, Cl. 426-478.000.

Brooke, Edric Raymond. Optical scanning system. 3,858,976, Cl. 355-66.000.

Brosow, Jorgen; and Furugard, Erik, to Dasy Inter S.A. Method of control of legitimacy safe against forgery. 3,859,508, Cl. 235-61.70B.

Brothers, Jack A.: *See—*
Blanding, Wendell S.; and Brothers, Jack A., 3,859,407.

Brown, Glenn M.: *See—*
Westervelt, James T.; Swis, Philip E.; and Brown, Glenn M., 3,858,289.

Brown, Harold J., to Lorain Products Corporation. Thyristor protection circuit for inverters. 3,859,587, Cl. 321-45.00C.

Brown International Corporation: *See—*
Rohm, Robert F.; and Alexander, L. Bruce, 3,858,500.

Brown, Paul L. Rotatable bobbin and tethered spinning object. 3,858,348, Cl. 46-61.000.

Brown, Robert L.: *See—*
Luton, James N., Jr.; Gauster, Wilhelm F.; and Brown, Robert L., 3,859,615.

Brown, Roger S.; and Rhodes, Philip L., to United States of America, Agriculture. Spiral carding apparatus. 3,858,277, Cl. 19-99.000.

Brown, Ronald E. Removable outsole for sport shoes. 3,858,336, Cl. 36-2.5AN.

Brown, Wilbert C.; and Hoctor, Arthur E., to Stromberg-Carlson Corporation. Centralized attendant service arrangement for PABX complex. 3,859,473, Cl. 179-27.0CA.

Brown & Williamson Tobacco Corporation: *See—*
Foster, Norman; and Lee, Rosemary P., 3,859,110.

Browne, Warren G.; and Baurose, Erik, to Browne, Warren G. Wall panel joint structure. 3,858,377, Cl. 52-495.000.

Browning, Albert E. Vehicle having spherical supports. 3,858,673, Cl. 180-26.00R.

Bruce, William F., to American Home Products Corporation. 2,6-Dichlorobenzylidenehydrazides. 3,859,281, Cl. 260-240.00G.

Brunn, Louis W.; Frayer, James A.; Massoth, Franklin E.; Paraskos, John A.; and Yanik, Stephen J., to Gulf Research & Development Company. Residual oil hydrodesulfurization process at reduced hydrogen rate with ammonia addition. 3,859,200, Cl. 208-216.000.

Brunn, Louis W.; Frayer, James A.; and Paraskos, John A., to Gulf Research & Development Company. First stage residual oil hydrodesulfurization with ammonia addition. 3,859,202, Cl. 208-210.000.

Brunn, Louis W.; Frayer, James A.; and Paraskos, John A., to Gulf Research & Development Company. Removal of sulfur from residual oil with downstream ammonia addition. 3,859,203, Cl. 208-216.000.

Brunn, Louis W.; Frayer, James A.; Paraskos, John A.; and Yanik, Stephen J., to Gulf Research & Development Company. Residual oil hydrodesulfurization process by catalyst pretreatment and ammonia addition. 3,859,204, Cl. 208-216.000.

Brunner, Josef K.: *See—*
Schindlbauer, Hellmuth; Eichberger, Walter; and Brunner, Josef K., 3,859,335.

Brunosson, Bengt Bruno, to AB Bahco Verktyg. Adjustable spanners. 3,858,466, Cl. 81-170.000.

Brunswick Corporation: *See—*
Hungerford, Daniel Comstock, 3,858,543.
Lanpheer, Richard A., 3,858,562.

Bruzzese, Tiberio; Ghieimetti, Giuseppe; and Ferrari, Rodolfo, to SPA Societa Prodotti Antibiotici, S.p.A. Basic derivatives of lysozyme. 3,859,435, Cl. 424-94.000.

Brym, Stanley J., to Baldwin-Gegenheimer Corporation. Air operated safety shut-off system for liquid reservoir feed. 3,858,602, Cl. 137-423.000.

Buchanan, William L.; and Worley, Arthur C., to Exxon Research and Engineering Company. Sequential combustion of waste gases. 3,859,033, Cl. 431-5.000.

Buckman, John D.; Pera, John D.; and Raths, Fred W., to Buckman Laboratories, Inc. Novel hydroxy substituted esters of thiolsulfonic acids and their use as microbicides. 3,859,322, Cl. 260-453.00R.

Buckman, Kenneth Ernest; Colenutt, Brian Frank; and Datlen, Robin Elgar, to General Motors Corporation. Internal combustion engine air intake control systems. 3,858,565, Cl. 123-122.00H.

Buckman Laboratories, Inc.: *See—*
Buckman, John D.; Pera, John D.; and Raths, Fred W., 3,859,322.

Budd Company, The: *See—*
Eggert, Walter S., Jr., 3,858,934.
Eggert, Walter S., Jr., 3,859,625.

Budraitis, Tadas, to Productronix, Inc. Stress transducer mounting and method of adjustment. 3,858,440, Cl. 73-88.50R.

Budzich, Tadeusz. Load responsive fluid control valves. 3,858,393, Cl. 60-427.000.

Bundschuh, John J.; Burnham, William L.; and Thomson, Kenneth W., to Eastman Kodak Company. Drive mechanism for motion picture projector. 3,858,828, Cl. 242-193.000.

Bunn, Frank C. High security hasp. 3,858,923, Cl. 292-281.000.

Burch, Homer A., to Morton-Norwich Products, Inc. 9-(P-anisidino)-7-methyl-(1h)-pyrazolo[3,4-f]quinoline. 3,859,291, Cl. 260-286.000.

Burger Chef Systems Inc.: *See—*
Main, Duane C., 3,859,644.

Burke, Jerry A., Jr.: *See—*
Davoud, John Gordon; and Burke, Jerry A., Jr., 3,858,395.

Burke, Patrick Michael, to du Pont de Nemours, E. I., and Company. Haloneopentyl phosphorodiamidate. 3,859,394, Cl. 260-953.000.

Burkin, Jury Alexandrovich; and Seleznev, Jury Emelyanovich. Device for making memory storage matrices. 3,858,294, Cl. 29-203.0MM.

Burkin, Jury Alexandrovich; and Seleznev, Jury Emelyanovich. Method of checking electric parameters of ferrite cores of memory stack. 3,858,724, Cl. 209-72.000.

Burkin, Jury Alexandrovich: *See—*
Seleznev, Jury Emelyanovich; Burkin, Jury Alexandrovich; and Kuzmin, Sergei Vladimirovich, 3,858,310.

Burkoth, Terry L.; and Ullman, Edwin F., to Syva Company. Novel paba release compounds. 3,859,333, Cl. 260-471.00C.

Burks, Darnall P.; Maher, John P.; Martin, Jacob H.; Frantz, Franklin D., Jr.; and Lemoine, Arthur Leo, to Sprague Electric Company. Composition for resistive material and method of making. 3,859,128, Cl. 117-213.000.

Burks, Philip P., Jr.; and Cooke, Quinton E., Jr., to du Pont de Nemours, E. I., and Company. Fish composition for draw-texturing yarn. 3,859,122, Cl. 117-138.80F.

Burman, Darrell C.: *See—*
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Burness, Donald M.; Ling, Hans G.; and Dappen, Glen M., to Eastman Kodak Company. Crosslinking polymeric dye mordants. 3,859,096, Cl. 96-84.00A.

Burnham, William L.: *See—*
Bundschuh, John J.; Burnham, William L.; and Thomson, Kenneth W., 3,858,828.

Burroughs Corporation: *See—*
Bennett, Walter Scott, 3,859,630.
Glaser, David, 3,859,559.
Radcliffe, Arthur J., Jr., 3,859,515.
Reitano, Carmen T., 3,858,705.

Burtelson, Frederick W., to Reliable Electric Company. Apparatus for preassembling a cable and dead anchor. 3,858,991, Cl. 403-194.000.

Burton, John C.; and Hayton, Eugene P., to Questor Corporation. Self-centering cafe door hinge assembly. 3,858,274, Cl. 16-153.000.

Busselmeier, Otto. Tube holder and interconnector system. 3,858,990, Cl. 403-194.000.

Bussey, Robert J., to Clorox Company, The. Retort muffler. 3,858,677, Cl. 181-45.000.

Butine, John Donovan; and Hapeman, Martin Jay, to General Electric Company. Traction motor housing suspension. 3,858,525, Cl. 105-136.000.

Butkus, George W.: *See—*
Scholin, Harold W.; Lisiecki, Hieronim L.; Butkus, George W.; and Eitzinger, Robert, 3,858,297.

Butler Automatic Inc.: *See—*
Butler, Richard A., Jr., 3,858,819.

Butler, Larry L. Sanitary diaper handling apparatus. 3,858,418, Cl. 68-235.00D.

Butler, Richard A., Jr., to Butler Automatic Inc. Web supply apparatus. 3,858,819, Cl. 242-58.300.

Butterfield, Ted Lee: *See—*
Williams, Robert P.; Butterfield, Ted Lee; and Emory, Lyle J., 3,858,812.

Buxton, David Arthur: *See—*
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Byrne, Paul A.: *See—*
Beld, John W.; Kinninger, Warren G.; Klohr, Robert E. N.; and Byrne, Paul A., 3,858,570.

Byron Jackson, Inc.: *See—*
Garcia, Calixto Fortunato, 3,859,107.

Bystron, Bruno, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Fabric control mechanism for textile cutting device. 3,858,473, Cl. 83-401.000.

Cabin Kogyo Kabushiki Kaisha: *See—*
Hirosawa, Tomio; and Otsuka, Susumu, 3,858,972.

Calandra, Donald A.; Dirubbio, Vincent; and Vallone, Joseph R. Safety vehicle seat system and trigger means for the same. 3,858,930, Cl. 296-65.00A.

Caldwell, John R.: *See—*
Jackson, Winston J., Jr.; Kuhfuss, Herbert F.; and Caldwell, John R., 3,859,246.

California Institute of Technology: *See—*
Jahnsen, Vilhelm J.; Bloom, William G.; and Campen, Charles F., Jr., 3,859,209.
Stevens, Mario R., 3,858,435.

Cameron Iron Works, Inc.: *See—*
Carman, Richard J.; and Benson, Paul R., 3,858,598.

Cameron, Russell J., to Ross Operating Valve Company. Safety control valve system for fluid actuated devices. 3,858,606, Cl. 137-596.160.

Camm, Richard John; and Green, Howard Stanton, to BP Chemicals International Limited. Production of carboxylic acids. 3,859,346, Cl. 260-533.00R.

Campagna, Edward R.: *See—*
Erchak, Michael; and Campagna, Edward R., 3,859,117.

Campbell, Peter Graham; and Buxton, David Arthur, to Morgan Fairest Limited. Apparatus for serially removing labels from a stack. 3,858,869, Cl. 271-33.000.

Campbell, Roger G.; Goff, Richard E., Jr.; and Guay, Normand D., to Johnson & Johnson. Narrow elastic fabric for apparel waistbands. 3,858,622, Cl. 139-421.000.

Campen, Charles F., Jr.: *See—*
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Canada, Her Majesty the Queen in Right of, as represented by the Secretary of State: *See—*
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Canadian General Electric Company Limited: *See—*
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Canadian Patents and Development Limited: *See—*
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Baird, Kenneth M.; Dobrowolski, Jerzy A.; Waldorf, Allan J.; and Carman, Philip D., 3,858,977.
Jennings, Harold J.; and Kenny, Charles Paul, 3,859,434.

Candor, James T.; and Tassone, Joseph V. Ball tee. 3,858,879, Cl. 273-26.00R.

Canon Kabushiki Kaisha: *See—*
Knechtel, Wilhelm; and Petersdorf, Gerhard, 3,858,975.
Nakamura, Zenzo, 3,859,562.

Carborundum Company, The: *See—*
Bailey, Wallace O.; McMurtry, Carl H.; and Miccioli, Bruno R., 3,859,399.
Frazier, George E., 3,858,994.
Marin, Glenn R., 3,859,160.
Nearhoof, Harold J., 3,858,433.
Schoeck, Vincent E., 3,859,065.

Carey, Thomas H.: *See—*
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Caridis, Andrew A.: *See—*
Benson, Clark K.; Caridis, Andrew A.; and Nilsen, Arthur A., 3,858,546.

Carlos, Donald D.; and Hicks, Darrell D., to Celanese Coatings & Specialties Company. Alcoholysis products. 3,859,266, Cl. 260-86.10E.

Carlson, Donald E., to Mark Controls Corporation. Sanitary frostproof hydrant. 3,858,599, Cl. 137-218.000.

Carman, Philip D.: *See—*
Baird, Kenneth M.; Dobrowolski, Jerzy A.; Waldorf, Allan J.; and Carman, Philip D., 3,858,977.

Carman, Richard J.; and Benson, Paul R., to Cameron Iron Works, Inc. Pressure control apparatus. 3,858,598, Cl. 137-102.000.

Carnot, Robert L.: *See—*
Lang, Robert S.; and Carnot, Robert L., 3,859,214.

Carpaneti, Edoardo: *See—*
Vargiu, Silvio; Passalenti, Beppino; Carpaneti, Edoardo; and Societa Italiana Resine S.I.R. S.p.A., 3,859,235.

Carpenter Technology Corporation: *See—*
Philip, Thoni V., 3,859,147.

Carr, Albert A.; Fleming, Robert W.; and Sill, Arthur D., to Richardson-Merrell Inc. Bis-basic esters and amides of xanthene and xanthone. 3,859,307, Cl. 260-335.000.

Carter, Elbert P.; and Neiuweboer, Gerrit, to du Pont de Nemours, E. I., and Company. Apparatus for forming a rupturable seal. 3,859,159, Cl. 156-581.000.

Carter, James L.; and Custead, Wayne G., to Exxon Research and Engineering Company. Massive nickel catalysts and use in hydrogenation processes. 3,859,370, Cl. 260-638.00B.

Carter, Ronald David: *See—*
Howard, Bernard Peter Fox; and Carter, Ronald David, 3,858,271.

Carty, Daniel T.; and Oline, James A., to Rohm and Haas Company. Multiphase acrylic modifiers for vinyl halide polymers. 3,859,384, Cl. 260-876.00R.

Carty, Daniel T.; and Oline, James A., to Rohm and Haas Company. Multiphase acrylic modifiers for vinyl halide polymers. 3,859,389, Cl. 260-885.000.

Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 3,859,514.
Kashio, Toshio, 3,859,612.

Cassagnes, Andre J. M., to Les Jouets Educatifs Universels. Simulated shooting apparatus including a transparent striking member. 3,858,884, Cl. 273-101.200.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Keller, Karlfried; Schnee, Karl; and Tichy, Dieter, 3,859,351.

Castrantas, Harry Marcus; and Keay, Robert Ellsworth, to FMC Corporation. Stable dry cleaning bleach composition. 3,859,223, Cl. 252-104.000.

Caterpillar Tractor Company: *See—*
Hein, Allyn J., 3,858,483.

Catton, Incorporated: *See—*
Lord, John G., 3,858,331.

Cavelli, Anthony R.; and Spector, George. Magna-tip. 3,858,587, Cl. 131-7.000.

Celanese Coatings & Specialties Company: *See—*
Carlos, Donald D.; and Hicks, Darrell D., 3,859,266.
Dukes, Clifford F.; and Welch, Robert W., 3,859,314.
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Celanese Corporation: *See—*
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Central De Chimie Fizica: *See—*
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Ceskoslovenska Akademie Ved: *See—*
Habrovec, Frantisek; Skarek, Jiri; Rys, Premysl; Mrkva, Frantisek; Zeman, Jiri; Janik, Miroslav, deceased; and Klines, Zdenek, 3,859,146.

Chaberek, Stanley: *See—*
Herz, Jack L.; and Chaberek, Stanley, 3,859,337.

Chambers, Henry B., to Hydranautics. Double chain jack. 3,858,847, Cl. 254-108.000.

Chambers, William L., to Minnesota Mining and Manufacturing Company. Multiple copy electrophotographic reproduction process. 3,859,089, Cl. 96-1.400.

Champion Industries, Inc.: *See—*
Schultz, Harry D.; and Lund, Harold H., 3,858,595.

Champion International Corporation: *See—*
Vincent, David N.; and Golden, Ronald, 3,859,151.

Charles O. Larson Co.,: *See—*
Larson, Charles O., 3,858,682.

Chatard, Michel: *See—*
Thiery, Jean; Chatard, Michel; Huvey, Michel; and Bonavent, Gerard, 3,858,616.

Chatterjee, Pronoy Kumar, to Personal Products Company. Fluid absorption and retention products and methods of making the same. 3,858,585, Cl. 128-290.00R.

Chaudhuri, Kiranendu; and Bachofner, Peter, to Swiss Aluminium Ltd. Method of operation of a cell for recovery of aluminium byelectrolysis of aluminium oxide in a fluoride melt. 3,859,184, Cl. 204-67.000.

Chemetron Corporation: *See—*
Behne, Stephen G., 3,858,361.
Hartmann, Leonard Joseph, 3,858,843.

Chen, Shih-Lu; and Murphy, James A., to Corning Glass Works. Method of improving the magnetic properties of cobalt substituted magnetite. 3,859,129, Cl. 117-237.000.

Cheng, Theresa Y.; Karady, Sandor; Pines, Seemon H.; and Sletzinger, Meyer, to Merck & Co., Inc. Process for preparing 3-substituted methyl-7-acylamido-7-methoxy-2-cephem-4-carboxylic acid and its esters. 3,859,282, Cl. 260-243.00C.

Cherry, Loren D.; Congrove, Ronald L.; and Ohlson, David E., to Royal Industries, Inc. Router. 3,858,630, Cl. 144-144.000.

Chevron Research Company: *See—*
Dwyer, Donald J., 3,859,227.
Hotten, Bruce W., 3,859,219.

Chicago Pneumatic Tool Company: *See—*
Wallace, William K., 3,858,444.

Ching, James F. Human body massaging apparatus. 3,858,579, Cl. 128-57.000.

Cho, Iwhan, to Uniroyal, Inc. Polyamido polysulfone thermoplastics and intermediates thereof. 3,859,252, Cl. 260-49.000.

Chobanova, Emilia Anguelova: *See—*
Radev, Hristo Kirilov; and Chobanova, Emilia Anguelova, 3,858,327.

Christoffersen, Albert B. Impression cylinder. 3,858,287, Cl. 29-132.000.

Chromalloy American Corporation: *See—*
Speirs, Kenneth K.; Weinstein, Martin; and Dean, Michael F., 3,859,061.

Chuang, Henry Ying Huang; and Das, Santanu, to Washington University, The. Switching and digital system. 3,859,513, Cl. 235-153.0AE.

Church, Nathan Lewis; and Snape, Edwin, to International Nickel Company, Inc., The. Method of enhancing powder compactibility. 3,859,086, Cl. 75-211.000.

Chynoweth, William R.; and Kayser, Wolfgang, to Honeywell Information Systems, Inc. Batch fabricated thin-film transducers having a common pole with tunnel erase poles and a plurality of read/write poles. 3,859,664, Cl. 360-121.000.

Ciampa, Fred A.; Serafini, Angelo; and Mazzarella, Louis, to Standard Box Spring Company. Spring and slat assembly. 3,858,862, Cl. 267-100.000.

Ciba-Geigy AG: *See—*
Hindermann, Peter; and Meindl, Hubert, 3,859,283.
Rabussier, Bernard; Mandon, Jean-Pierre; and Hennart, Claude, 3,858,807.

Ciba-Geigy Corporation: *See—*
Blattner, Hans; and Schindler, Walter, deceased, 3,859,439.
Eichenberger, Jurg; Perlhefter, Norbert; and Bole, Pierre-Andre, 3,859,076.

Ciba-Giegy Corporation: *See—*
Beriger, Ernest, 3,859,391.

Cielo, John Robert; Moorman, William Albert; and Rao, Suryanarayana Krishnappa, to International Business Machines Corporation. Waveform averaging rc circuit. 3,859,590, Cl. 323-17.000.

Cincinnati Milacron, Inc.: *See—*
Ma, Carlton Y. W., 3,859,400.

Clairol Incorporated: *See—*
Walter, Henry J.; and White, Roy, 3,858,588.

Clark Equipment Company: *See—*
Sisson, Ronald L.; and Shellberg, James E., 3,858,455.
Sisson, Ronald L.; Holmes, Donald E.; and Zeller, Burton S., 3,859,216.

Clark, Herbert D.: *See—*
De Vincent, Patsy; and Clark, Herbert D., 3,858,915.

Clarkson, Kenneth: *See—*
Hall, Roger L.; Wainwright, Edward S.; and Clarkson, Kenneth, 3,859,652.

Clason, Jan Christiaan, to Hazemeijer B. V. Electric switching apparatus. 3,859,611, Cl. 335-142.000.

Claycomb, Dean A. Automatic fluid operated spring loaded jack lock assembly. 3,858,867, Cl. 269-27.000.

Clemons, Donald Gordon; and Schroeder, Paul Robert, to Bell Telephone Laboratories, Incorporated. Low power dynamic control circuitry. 3,859,545, Cl. 307-296.000.

Clemons, Donald Gordon; and Vogelsong, James Howard, to Bell Telephone Laboratories, Incorporated. Dynamic buffer circuit. 3,859,641, Cl. 340-173.00R.

Clorox Company, The: *See—*
Bussey, Robert J., 3,858,677.

Closet Maid, Inc.: *See—*
Sauey, Donald P., 3,859,002.

Clough, Peter Spence: *See—*
Nicklin, Thomas; and Clough, Peter Spence, 3,859,415.

Cloyd, Harold S., to Nosco Plastics, Inc. Box wall fasteners. 3,858,745, Cl. 220-7.000.

Cocherell, Francis E.; and Frinchaboy, Warren F. Disposable quick coupling rotary grinding disc for compoundly curved surfaces. 3,858,368, Cl. 51-358.000.

Cody, Nicholas Francis, to du Pont de Nemours, E. I., and Company. Purification of hydroxyacetic acid. 3,859,349, Cl. 260-535.00R.

Coglitore, Anthony. Actuating mechanism for toilet flush tank or dual flush type. 3,858,250, Cl. 4-67.00A.

Cohen, Joseph David: *See—*
Radkowsky, Alvin; Conley, George Henry; Ryals, Henry Wesley; Hanson, John Nils; Cohen, Joseph David; and Weinreich, William Arthur, III, 3,859,165.

Cohen, Melvin. Joint structure. 3,858,988, Cl. 403-18.000.

Colenutt, Brian Frank: *See—*
Buckman, Kenneth Ernest; Colenutt, Brian Frank; and Datlen, Robin Elgar, 3,858,565.

Collard, Daniel: *See—*
Boúy, Pierre; and Collard, Daniel, 3,859,197.

Collier, John Daniel, III, to Bell & Howell Company. Continuous show slide projector. 3,858,970, Cl. 353-21.000.

Colorant Schmuckstein GmbH: *See—*
Elbe, Maximo, 3,858,979.

Columbia Research Laboratories, Inc.: *See—*
Roberts, Harry E., III; and Carey, Thomas H., 3,858,443.

Combustion Engineering, Inc.: *See—*
Flynn, Edward Paul; and Rogers, Arthur Carter, 3,859,166.

Comeau, Henri Jules, to Comeau, Henri Jules; and Welti, Clarence W. Soil testing apparatus. 3,858,441, Cl. 73-88.00E.

Comfort, Inc.: *See—*
Miller, Ray J.; and Trabbic, Gerald W., 3,858,806.

Comfort Products, Inc.: *See—*
Giese, Erik O., 3,859,496.

Cominco Ltd.: *See—*
Battiston, Louis; Niessen, Paul; Wellington, John R.; and Watson, Thorpe E., 3,858,642.

Compagnie D'Etudes et de Participations Industrielles: *See—*
Baguet, Paul, 3,858,859.

Compagnie Generale des Establissements Michelin, raison sociale Michelin & Cie: *See—*
Boileau, Jacques, 3,858,633.

Compak Systems, Inc.: *See—*
Volkert, John K., 3,858,792.

Computer Cable Corporation: *See—*
Jannery, George E.; and Messinger, Mark P., 3,859,596.

ComSci Data, Inc.: *See—*
Holmes, Robert S.; and Katz, Walter M., 3,859,631.

Comstedt, Tore Erik Karl, to AB Tekniska Fjadrar. Single lever control for throttle and gearing. 3,858,699, Cl. 192-.098.

Conair, Inc.: *See—*
Myers, Lawrence Archibald, Jr., 3,858,772.

Conaty, Francis Henry, to McCulloch Corporation, The. Chain saw cutter bar and its method of fabrication. 3,858,321, Cl. 30-383.000.

Condit, Robert E., to General Electric Company. Condenser apparatus. 3,859,004, Cl. 34-75.000.

Cone, Carroll: *See—*
Shefsiek, Paul K.; and Cone, Carroll, 3,859,040.

Congrove, Ronald L.: *See—*
Cherry, Loren D.; Congrove, Ronald L.; and Ohlson, David E., 3,858,630.

Conley, George Henry: *See—*
Radkowsky, Alvin; Conley, George Henry; Ryals, Henry Wesley; Hanson, John Nils; Cohen, Joseph David; and Weinreich, William Arthur, III, 3,859,165.

Conn, William Michael: *See—*
Ott, Eugene Gray; and Conn, William Michael, 3,858,670.

Connectronics Corporation: *See—*
Bonhomme, Francois Robert, 3,858,962.

Connor, Margaret A.: *See—*
Saunders, Robert M.; Kohler, George O.; Connor, Margaret A.; and Edwards, Richard H., 3,859,451.

Connors, William P.; Wagner, Robert G.; and Richmond, Jon C., to McDonnell Douglas Corporation,. Grid lateral photodetector. 3,859,521, Cl. 250-211.00J.

Contronics Data Computer Corporation: *See—*
Duley, Howard, 3,858,703.

Cook, Robert Wilcox, to Bell Telephone Laboratories, Incorporated. Microprogram controlled data processor for executing microprogram instructions from microprogram memory or main memory. 3,859,636, Cl. 340-172.500.

Cooke, Quinton E., Jr.: *See—*
Burks, Philip P., Jr.; and Cooke, Quinton E., Jr., 3,859,122.

Cookler, Jon: *See—*
Pietrack, Eli; Cookler, Jon; and Nadell, Barry, 3,858,725.

Coomes, Edmund S. All-way rest. 3,858,254, Cl. 5-8.000.

Coonrod, William C., to Fibergrate Corporation. Method of making a fiber reinforced plastic article. 3,859,409, Cl. 264-295.000.

Cooper, Albert S., Jr.: *See—*
Yeadon, David A.; Danna, Gary F.; and Cooper, Albert S., Jr., 3,859,121.

Copelin, Harry B., to du Pont de Nemours, E. I., and Company. Process for the production of 2-methyl-1,4-butanediol. 3,859,369, Cl. 260-635.00R.

Corbiere, Claude, to Rhone-Poulenc Textile. Yarn bundle with piecing end and method of forming same. 3,858,816, Cl. 242-18.0PW.

Corbin, Patrick L. Intruder detection system utilizing artificial ambient light. 3,859,648, Cl. 340-258.00B.

Cordell, Martin, to Studley Paper Company, Inc. Double-wall vacuum cleaner filter bag. 3,859,064, Cl. 55-368.000.

Corning Glass Works: *See—*
Allen, Richard E.; Frazier, John F.; and Smith, William C., 3,858,378.
Blanding, Wendell S.; and Brothers, Jack A., 3,859,407.
Borrelli, Nicholas F., 3,859,643.
Chen, Shih-Lu; and Murphy, James A., 3,859,129.
Noll, Burton A.; and Torrico, Jorge L., 3,858,363.
Schultz, Peter C., 3,859,073.
Thiel, Frank L., 3,859,536.
Tick, Paul A., 3,858,548.

Corry, Thomas M., to General Motors Corporation. Apparatus for generating three phase sinusoidal voltages. 3,859,584, Cl. 321-5.000.

Cosby, Floyd M. Golf clubs of the type known as irons. 3,858,886, Cl. 273-167.00F.

Cosco, Inc.: *See—*
Gerken, Donald L., 3,858,936.

Costa, Michael J.; Greeson, James C., Jr.; and Haberland, Peter H., to International Business Machines Corporation. Method of spacing the plates of a gaseous discharge device. 3,858,284, Cl. 29-25.130.

Cottrill, John E.: *See—*
Reed, David S.; and Cottrill, John E., 3,858,643.

Coulter Electronics, Inc.: *See—*
Hogg, Walter R., 3,859,012.
Jones, Alan Richardson, 3,858,450.

Couvillon, James B.; and Shipley, Roy E., to Texas Instruments Incorporated. Absorptive pin attenuators. 3,859,609, Cl. 333-81.00A.

Cragg, William Donald; Lawson, Anthony Newton; and Sterling, Henley Frank, to International Standard Electric Corporation. Carbon microphone. 3,859,478, Cl. 179-122.000.

Cranston Print Works Company: *See—*
Owren, Erling; and McElroy, William, 3,858,507.

Craven, George Frederick; Thomas, Raymond Richard; and Berger, Maurice Francis, to International Standard Electric Corporation. Waveguide mixer. 3,859,600, Cl. 325-445.000.

Cremer, Joseph; and Martin, Willi, to Knapsack Aktiengesellschaft. Process for the manufacture of phosphorous acid. 3,859,419, Cl. 423-316.000.

Crescentini, Lamberto; and Wells, Rodney Lee, to Allied Chemical Corporation. Antistatic polyamide fiber. 3,859,380, Cl. 260-857.0PG.

Crest/Good Manufacturing Company, Inc.: *See—*
Goerler, Ronald B., 3,858,325.

Cronk, Vern V.: *See—*
Fischer, Harry A.; Dietzel, Kenneth; Cronk, Vern V.; and Stimpson, Dale E., 3,858,545.

Cross Company, The: *See—*
Westervelt, James T.; Swis, Philip E.; and Brown, Glenn M., 3,858,289.

Croswell, Harold E.: *See—*
Pocobello, Michael A.; Croswell, Harold E.; and Riisager, Harold E., 3,858,944.

Crouse, Jere W., to Beloit Corporation. Double drum winder. 3,858,820, Cl. 242-66.000.

Crow, Geoffrey George: *See—*
Roberts, Maurice; Harris, John Derek; Humpage, Roy William; and Crow, Geoffrey George, 3,859,135.

Crowe, Sylvester L. Artificial breast with extensions for use subsequent to mastectomy. 3,858,248, Cl. 3-36.000.

Crowe, William P., to General Electric Company. Refrigerator cabinet having adjustable wheel or roller. 3,858,270, Cl. 16-19.000.

Crowley, Dennis: *See—*
Smalley, Graham; McGrow, George; and Crowley, Dennis, 3,859,212.

Crown Zellerback Corporation: *See—*
Reba, Imants; and Wolthausen, Edward C., 3,859,205.

Crum, Donald; Goff, McKinley; and Hampton, Edward L., to Legget & Platt Incorporated. Reclining chair assembly. 3,858,932, Cl. 297-85.000.

Cullen, Donald L.: *See—*
Foster, George B.; Cullen, Donald L.; and Abnett, Albert C., 3,858,983.

Culpepper, Charles A.: *See—*
McGlasson, Donald S.; Tidwell, James T.; Weaver, Charles E.; and Culpepper, Charles A., 3,859,145.

Cummings, Charles A.; and Giordano, George P., to General Mills Fun Group, Inc. Doll with ingestion system. 3,858,352, Cl. 46-141.000.

Curtis, Anthony Thomas, to Marconi Company Limited, The. Signal handling arrangement and frequency diversity combining arrangements utilising the same. 3,859,601, Cl. 325-305.000.

Curtis, Lawrence A., to T.A.D. Avanti, inc. Telephone answering system and apparatus including improved ring responsive circuitry for selectively connecting and isolating the system from the telephone line. 3,859,463, Cl. 179-6.00R.

Curtiss-Wright Corporation: *See—*
Myers, David M.; and Jones, Charles, 3,858,557.

Custead, Wayne G.: *See—*
Carter, James L.; and Custead, Wayne G., 3,859,370.

Cuthbert, Robert M., to British Columbia Research Council. Method for non-destructive testing of fish for sex. 3,859,522, Cl. 250-223.00R.

Czerski, Jan, to Shell Oil Company. Production of cellular articles by injection molding. 3,859,406, Cl. 264-51.000.

D-Cycle Associates: *See—*
Davoud, John Gordon; and Burke, Jerry A., Jr., 3,858,395.

Dai'El Inc., The: *See—*
Okubo, Kei; Saito, Toshio; and Ueda, Kazunori, 3,859,062.

Daimler-Benz Aktiengesellschaft: *See—*
Kleefeid, Frank; and Gmeiner, Gunter, 3,858,919.

Dainton, Robert L.: *See—*
Baliga, Janardhana B.; and Dainton, Robert L., 3,858,387.

Danielsen, Daniel; and Ketchledge, Raymond Waibel, to Bell Telephone Laboratories, Incorporated. Reed switch communication network ensuring open contacts before closure. 3,859,471, Cl. 179-18.0GF.

Dankocsik, George M.: *See—*
Immel, Richard H.; Dankocsik, George M.; and Galizia, Eugene V., 3,859,404.

Danna, Gary F.: *See—*
Yeadon, David A.; Danna, Gary F.; and Cooper, Albert S., Jr., 3,859,121.

Dannals, Leland E. Oligomers. 3,859,260, Cl. 260-79.30R.

Danner, William D.: *See—*
Ver, Istvan L.; Danner, William D.; and Woitschatzke, Hans, 3,858,894.

Dappen, Glen M.: *See—*
Burness, Donald M.; Ling, Hans G.; and Dappen, Glen M., 3,859,096.

Darragh, Kirk Vail: *See—*
Wood, Arthur S. M., Jr.; and Darragh, Kirk Vail, 3,859,425.

Das, Santanu: *See—*
Chuang, Henry Ying Huang; and Das, Santanu, 3,859,513.

Dasek, Jaroslav; and Padly, Yvan, to Societe D'Assistance Technique Pour Produits Nestle S.A. Filter. 3,859,067, Cl. 55-485.000.

Dasy Inter S.A.: *See—*
Brosow, Jorgen; and Furugard, Erik, 3,859,508.

Data Source Corporation: *See—*
Dillingham, Edward; and Humphrey, John H., 3,859,509.

Datlen, Robin Elgar: *See—*
Buckman, Kenneth Ernest; Colenutt, Brian Frank; and Datlen, Robin Elgar, 3,858,565.

Daughdrill, E. C.: *See—*
Bond, Ronald L.; Daughdrill, E. C.; and Brice, Henry T., 3,858,939.

Davies, Dennis, to International Computers Limited. Methods and apparatus for forming electrical connections. 3,858,958, Cl. 339-17.0LM.

Davis, James L.; Lopke, Edward L.; and Huellmantel, Louis W., to General Motors Corporation. Gas turbine starting circuit. 3,858,391, Cl. 60-39.140.

Davis, Robert Bruce, to Union Carbide Corporation. Phase separator for cryogenic fluid. 3,858,404, Cl. 62-51.000.

Davison, Raymond B.: *See—*
Bailey, Maurice E.; Spaunburgh, Richard G.; and Davison, Raymond B., 3,859,323.

Davoud, John Gordon; and Burke, Jerry A., Jr., to D-Cycle Associates. External combustion power producing method and apparatus. 3,858,395, Cl. 60-688.000.

Dawson, Larry Ralph; Lorimor, Orval George; and Saul, Robert H., to Bell Telephone Laboratories, Incorporated. Epitaxial crystal growth of group iii-v compound semiconductors from solution. 3,859,148, Cl. 148-172.000.

Day, Donald L.; Halstead, Charles H.; and Huck, Neil F., to Textron Inc. Metal roof clips. 3,858,373, Cl. 52-713.000.

Dazey Products Company: *See—*
McNair, Samuel L., 3,859,497.

De Staat Der Nederlanden, Ten Deze Vertegenwoordigd Door De Directeur Generaal Der Posterijen, Telegrafie En Telefonie: *See—*
Van Duuren, Hendrik Cornelis Anthony, 3,859,655.

Dean, Michael F.: *See—*
Speirs, Kenneth K.; Weinstein, Martin; and Dean, Michael F., 3,859,061.

DeAngelis, Gerald George; and Hess, Hans-Jurgen Ernst, to Pfizer Inc. Arylpyrimidines - inhibitors of platelet aggregation and bronchodilators. 3,859,288, Cl. 260-256.40N.

DEC International, Inc.: *See—*
Hazen, Gretz L., 3,858,855.

Deere & Company: *See—*
Bahl, James Melvin; Moon, Seaton; and Magruder, Michael Keith, 3,858,456.
Whisler, Edwin Lee, 3,858,695.

Defiance Butter Machine Company: *See—*
Orlando, John B.; and Ruggiero, Anthony M., 3,858,462.

Dehnert, Heinz; and Steiert, Hermann, to Hugo Sachs Elektronik Kommanditgesellschaft. Portable electrocardioscope. 3,858,576, Cl. 128-2.06R.

Del Bon, Franco. Automatically opening and closing device for a container with liquid, or foam-forming filling. 3,858,773, Cl. 222-494.000.

DeLigt, John, to Westvaco Corporation. Accordion, folding and cutting apparatus. 3,858,476, Cl. 83-512.000.

Demag, A.G.: *See—*
Luck, Jochen; and Thorpe, John, 3,858,517.

Dementi, Brian Armstead; and Lazarus, Stanley David, to Allied Chemical Corporation. Continuous jet pressure steaming of solid state polymerized polyester filaments with less than 22 meq/kg cooh and an intrinsic viscosity of at least .75 dl.. 3,859,042, Cl. 8-115.500.

Demny, Thomas Casimir; and Scannell, James Parnell, to Hoffmann-La Roche Inc. L-2-amino-4-m ethoxy-trans-3-butenoic acid. 3,859,171, Cl. 195-96.000.

Denhard, Elbert E., Jr.; and Gaugh, Robert R., to Armco Steel Corporation. Wrought austenitic alloy products. 3,859,082, Cl. 75-128.000.

Deniega, Jose Castillo, to Wesco Industries Corporation. Positive yarn feeding device. 3,858,830, Cl. 242-47.010.

Deno, Norman C.: *See—*
Turner, John O.; and Deno, Norman C., 3,859,345.

Denton, Howard M.; and Slagle, Martin Luther, to APL Enterprises, Inc. Optical plumb leveler. 3,858,984, Cl. 356-250.000.

De Pas, Laddie A., to General Electric Company. Condenser apparatus. 3,858,330, Cl. 34-75.000.

De Rooy, Abraham H.; and Goettsch, Reijer, to Stamicarbon B. V. Process for separating lactams. 3,859,278, Cl. 260-239.30A.

De Salvo, Walter Anthony: *See—*
Win, Maung Hla; De Salvo, Walter Anthony; and Kenney, Edward Joseph, 3,858,854.

Desruet, Michel: *See—*
Goncalves, Antonin; and Desruet, Michel, 3,858,760.

Deutsch, Daniel H. Method of forming glyoxylic acid semicarbazone. 3,859,347, Cl. 260-534.00R.

Deutsch, Daniel H. Method of forming glyoxylic acid semicarbazone. 3,859,348, Cl. 260-534.00R.

Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler: *See—*
Laufer, Siegmar; and Roy, Waldemar, 3,859,420.
Posselt, Klaus; and Thiele, Kurt, 3,859,305.

De Vincent, Patsy; and Clark, Herbert D., to General Motors Corporation. Snap together coupling with integral spring. 3,858,915, Cl. 285-320.000.

Dews, George H.; Eichner, Daniel; and Kemp, Fred S., to United Aircraft Corporation. Novel composite fuel cell electrode. 3,859,139, Cl. 136-120.0FC.

Diamond Shamrock Corporation: *See—*
Blomfield, Rodney A., 3,859,044.

Diamonhead Corporation: *See—*
Gottlieb, C. Robert; and Lewis, Eugene C., 3,858,928.

Diassi, Patrick A.: *See—*
Stiller, Eric T.; Levine, Seymour D.; Principe, Pacifico A.; and Diassi, Patrick A., 3,859,340.

Dickfeldt, Siegfried; and Steffens, Karl, to Varta Batterie A.G. Electrochemical device having a casing formed of wrapped tape. 3,859,133, Cl. 136-166.000.

Diedwardo, Andrew H.: *See—*
Druin, Melvin L.; Diedwardo, Andrew H.; and Parker, James A., 3,859,187.

Diepeveen, John C. Mechanism for incremental movement of vertical frame. 3,858,784, Cl. 228-4.000.

Dietl, Hans K.; and Brannock, Kent C., to Eastman Kodak Company. 6-Oxo-2-methylheptanal ketals. 3,859,310, Cl. 260-340.900.

Dietz, Raymond L.; and McFadden, Allan L., to Owens-Illinois, Inc. Ceramic substrates hermetically sealed with vitreous coatings. 3,859,126, Cl. 117-169.00R.

Dietzel, Kenneth: *See—*
Fischer, Harry A.; Dietzel, Kenneth; Cronk, Vern V.; and Stimpson, Dale E., 3,858,545.

Digilin Incorporated: *See—*
Hibbs, Eugene B., Jr.; and Swire, Roger, IV, 3,859,605.

Digital Communications Inc.: *See—*
Kirk, Donald, Jr., 3,859,457.

Digital Data Systems, Inc.: *See—*
Siems, Lee E.; Thigpen, Ben B.; and Harman, Charles C., 3,859,573.

Dillingham, Edward; and Humphrey, John H., to Data Source Corporation. Embossed card reading and imprinting apparatus. 3,859,509, Cl. 235-61.90R.

Dillon, Nicholas Thomas Edward. Oxy-acetylene torches. 3,858,808, Cl. 239-429.000.

Dinerstein, Ben. Method for soothing cooling and refreshing. 3,859,432, Cl. 424-47.000.

Dirubbio, Vincent: *See—*
Calandra, Donald A.; Dirubbio, Vincent; and Vallone, Joseph R., 3,858,930.

Display Enterprises, Inc.: *See—*
Saunders, Norman B., 3,859,591.

Dittrich, Robert George; and Thelemaque, Louis Emanuel, to Bell Telephone Laboratories, Incorporated. Communication switching network. 3,859,470, Cl. 179-18.0EA.

Dixon, William D., to Monsanto Company. Preparation of 2-iminoimidazole derivatives. 3,859,302, Cl. 260-309.600.

Dobrowolski, Jerzy A.: *See—*
Baird, Kenneth M.; Dobrowolski, Jerzy A.; Waldorf, Allan J.; and Carman, Philip D., 3,858,977.

Doe, Ewart Harold, to Twyford Moors Ltd. Bar feeder for feeding bar stock material to a machine tool. 3,858,779, Cl. 226-189.000.

Doi, Kikuo; and Futami, Takehiro, to Nippon Electric Company Limited. Rectangular piezoelectric ceramic resonator oppositely poled along opposite side surfaces. 3,859,546, Cl. 310-9.500.

Doldouras, George A.: *See—*
Kollonitsch, Janos; and Doldouras, George A., 3,859,276.

Dolgov, Valentin Mikhailovich; Saveliev, Vyacheslav Vasilievich; Krylov, Vladimir Konstantinovich; Tomashevsky, Valentin Mitrofanovich; and Zolotarev, Evgeny Ivanovich. Machine for multiple grinding of semiconductor. 3,858,369, Cl. 51-5.00B.

Donaldson Company, Inc.: *See—*
Dudrey, Denis J., 3,858,793.

Dorman, Efim Isaakovich: *See—*
Terentiev, Vladimir Dmitrievich; Dorman, Efim Isaakovich; Izmailova, Julia Sergeevna; Feigin, Viktor Zinovievich; Sandovskaya, Valentina Alexandrovna; Rudina, Galina Jurievna; Lastochkin, Jury Vasilievich; Person, Leonid Matveevich; Saxonov, Gennady Markovich; Yakimovich, Viktor Yakovlevich; and Zaitsev, Vladimir Andreevich, 3,858,556.

Dorschner, Kenneth P.; and Albright, James A., to SCM Corporation. N-haloacyl (2-spirocycloaliphatic) oxazolidines. 3,859,292, Cl. 260-293.660.

Dostert, Philippe; and Kyburz, Emilio, to Hoffmann-La Roche Inc. 6-Halo-1-aminomethyl-1,2,3,4-tetrahydrocarbazoles. 3,859,304, Cl. 260-315.000.

Dovganjuk, Ivan Yakovlevich: *See—*
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Downers, Delores B. Device for suspending food articles in a cooking medium. 3,858,496, Cl. 99-448.000.

Drake, Daniel H. Dental material mixing holder and cooler. 3,858,410, Cl. 62-458.000.

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Dubeck, Michael; and Hargis, Duane C., to Ethyl Corporation. Recovery of metal values from sulfide ores using nitrogen dioxide as a roast gas. 3,859,411, Cl. 423-45.000.

Dubenko, Nicholas I. Shoe display and carrying case. 3,858,693, Cl. 190-16.000.

Dudrey, Denis J., to Donaldson Company, Inc. Cartridge centrifuge. 3,858,793, Cl. 233-2.000.

Duff, John R., to T.K.F., Inc. Conveyor drive mechanism. 3,858,454, Cl. 74-229.000.

Duffy, James V., to United States of America, Navy. Treatments for improving the process and yield of carbon fibers obtained from the pyrolysis of rayon yarn. 3,859,043, Cl. 8-116.00P.
Duffy, Richard J., to USM Corporation. Method of making self-locking internally threaded articles. 3,858,262, Cl. 10-86.00A.
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Duley, Howard, to Contronics Data Computer Corporation. Bidirectional dual head printer. 3,858,703, Cl. 197-1.00R.
Dullinger, Karl, to Kronseder, Hermann. Automatic label wrapper. 3,859,155, Cl. 156-212.000.
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Duquesne, Victor. Device for fitting and removing a tire of vehicle wheels. 3,858,637, Cl. 157-1.240.
Durand, Philip E.; and Norris, Lonnie H., to United States of America, Army. Shock absorbent collar for armor plate. 3,858,241, Cl. 2-2.500.
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Dworak, Wilhelm; and Talmon, Wolfgang, to Robert Bosch G.m.b.H. Gear pump. 3,859,014, Cl. 418-135.000.
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Ebnother, Anton; and Rissi, Erwin, to Sandoz Ltd. (also known as Sandoz AG). 3-[1-(4-Phenyl-4-oxobutyl)-4-hydroxy-4-piperidyl]dihydro-2(3h) furanones. 3,859,290, Cl. 260-293.670.
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Eiselstein, Herbert Louis; and Hosier, James Crombie, to International Nickel Company, Inc., The. Nickel-chromi um-cobalt-molybdenum alloys. 3,859,060, Cl. 29-193.000.
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ELITEX, Zavody textilniho strojirenstvi, generalni reditelstui: *See—*
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Evans, James P. Combination hexagonal and square member wrench. 3,858,464, Cl. 81-119.000.

Evans, James P., to Rylander, Nicholas M. Wrench having interceptor for selectably ratcheting or torqueing a hexagonal member. 3,858,467, Cl. 81-179.000.

Evans, Jesse L.; and Hecker, Eugene L., to General Motors Corporation. Airflow cooling system for heat-cleaning ranges. 3,859,499, Cl. 219-396.000.

Evans, John H.; and McEwen, Frederick R., to ICI United States Inc. Controlled burning squib arrangement. 3,858,392, Cl. 60-637.000.

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Fink, Robert. Fishing rod holder. 3,858,833, Cl. 248-44.000.

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Fleming, Robert W.; Sill, Arthur D.; and Sweet, Francis William, to Richardson-Merrell Inc. Bis-basic ketones of xanthene and xanthen-9-one. 3,859,286, Cl. 260-247.50R.

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Gibbons, Loren Kenneth, to FMC Corporation. Isoxazolpyrimidine herbicides and method of controlling plant growth. 3,859,075, Cl. 71-92.000.
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Goldstein, Herman B.; and Ouderkirk, John T., to Sun Chemical Corporation. Corrugated paperboard compositions. 3,858,273, Cl. 161-133.000.

Gommans, Hubertus Johannes Josephus; and Stikkelbroeck, Josephus Gerardus Henricus, to U.S. Philips Corporation. Connection of coaxial cable ends. 3,859,455, Cl. 174-88.00C.

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Grant, Jon H.; and Pauly, Raymond W., to Hughes Aircraft Company. High speed magnetic deflection amplifier having low-power dissipation. 3,859,557, Cl. 315-27.0TD.

Grasselli, Robert K.; and Friedrich, Maria S., to Standard Oil Company, The. Process for the oxidation of olefins to unsaturated aldehydes. 3,859,358, Cl. 260-604.00R.

Graves, Carl D. Tennis practice stroke courts with common ball receive court. 3,858,880, Cl. 273-29.00A.

Graves, David J.; and Ritchey, Charles R., to United States of America, Army. Process for making a polyvinyl alcohol gel support pad. 3,858,379, Cl. 53-25.000.

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Griner, Arthur J.; and Koppa, Daniel Anthony, to Nabisco, Inc. Apparatus for and method of making pastry cups and the like. 3,859,030, Cl. 425-450.100.

Griot, Rudolf G. 1-p-(ω)-AMINOALKOXY)PHENYL-3,5-DIARYLCYCLOHEPTANES. 3,859,355, Cl. 260-570.700.

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Gross, Reinhold W., to S. C. Johnson & Sons, Inc. Sashless window structure. 3,858,356, Cl. 49-413.000.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Mechanism for the anti-locking braking of a wheel of a motor vehicle. 3,858,946, Cl. 303-21.00F.

Grote, Hugo; and Peithmann, Ludolf. Manually operable lifting apparatus. 3,858,845, Cl. 254-168.000.

Grundherr, Willy J., to Xerox Corporation. Control logic for print wheel and hammer of high speed printing apparatus. 3,858,509, Cl. 101-93.00C.

Grussen, Jean. Bottle cap. 3,858,742, Cl. 215-253.000.

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Gudmestad, Ragnar, to Artos Engineering Company. Endless chain conveyor for a terminal applicator. 3,858,292, Cl. 29-203.0DT.

Gueldenpfennig, Klaus; Pommerening, Uwe A; and Russell, Stanley L., to Stromberg-Carlson Corporation. Private automatic branch exchange with central office features. 3,859,474, Cl. 179-27.0DA.

Gugler, Victor F., to Entenmann's Bakery, Inc. Apparatus for making coffee rings. 3,859,018, Cl. 425-126.00R.

Gulf Research & Development Company: *See—*
Brunn, Louis W.; Frayer, James A.; Massoth, Franklin E.; Paraskos, John A.; and Yanik, Stephen J., 3,859,200.
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Gysin, Leonhard, executor: *See—*
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Gysling, Henry J.; and Vinal, Richard S., to Eastman Kodak Company. Photographic systems based on photosensitive copper (i) complexes. 3,859,092, Cl. 204-15.000.

Haas, Frank C., to Oil Shale Corporation, The. Alumina recovery from oil shale residue. 3,859,413, Cl. 423-122.000.

Haas, Lawrence J. Mini bike carrier. 3,858,775, Cl. 224-42.03B.

Haas, Robert V., to Singer Company, The. Needle dispenser. 3,858,722, Cl. 206-380.000.

Haberland, Peter H.: *See—*
Costa, Michael J.; Greeson, James C., Jr.; and Haberland, Peter H., 3,858,284.

Habich, Adolph Broadus; and Ward, John Wesley, Jr., to International Business Machines Corporation. Transducer track selection apparatus. 3,859,662, Cl. 360-106.000.

Habrovec, Frantisek; Skarek, Jiri; Rys, Premysl; Mrkva, Frantisek; Zeman, Jiri; Janik, Miroslav, deceased (by Janik, Drahomire, wife and heiress); and Klines, Zdenek, to Ceskoslovenska Akademie Ved. Steel composition, particularly for anti-friction bearings. 3,859,146, Cl. 148-36.000.

Haede, Werner: *See—*
Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindmer, Ernat, 3,859,272.

Haese, Kurt; Frewe, Wolfgang; and Lendt, Hans-Jurgen, to Siemens Aktiengesellschaft. Electric vacuum switching unit having a power drive. 3,859,486, Cl. 200-144.00B.

Hagenah, Hans-Gerhard, to Perpetuum-Ebner, Fabrik fur Feinmechanik Und Elektrotechnik Steidinger & Co. kom. ges., Firma. Tone arm for record players and record changers. 3,858,889, Cl. 274-37.000.

Hagiwara, Yoshitoshi: *See—*
Kusaka, Kunio; Osawa, Makoto; Hagiwara, Yoshitoshi; Sekine, Tomio; and Takagi, Yoshiaki, 3,859,083.

Hagood, Jerry W.; Shelton, Jeo; and Norman, Ralph L. Hybrid rectifier. 3,859,550, Cl. 313-309.000.

Hair Again Ltd.: *See—*
Nate, Michael A., II; and Mann, Maurice A., 3,858,245.

Halcon International, Inc.: *See—*
Kollar, John, 3,859,368.

Hales, John H.; and McAllister, Myron R. Apparatus for finishing draperies. 3,858,768, Cl. 223-32.000.

Hall, Daniel N.: *See—*
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Hall, James D.: *See—*
Ashe, John B.; Berry, Peter F.; and Hall, James D., 3,859,525.

Hall, Joshua D. Pneumatic supply and vent control valve. 3,858,608, Cl. 137-625.250.

Hall, Roger L.; Wainwright, Edward S.; and Clarkson, Kenneth, to North American Systems Corporation, by said Hall and Wainwright. Method and apparatus for detecting the theft of articles. 3,859,652, Cl. 340-280.000.

Hallam, Edwin Carey; and Hallam, Heather, to E. C. Hallam and Company. Motor graders. 3,858,661, Cl. 172-1.000.

Hallam, Heather: *See—*
Hallam, Edwin Carey; and Hallam, Heather, 3,858,661.

Halliburton Company: *See—*
Thomas, Mickey A., 3,858,275.
Wray, Gary Q.; and Holden, John C., 3,858,649.

Hallworth, Gerald Wynn; and Smith, Sidney William, to Allen & Hanburys Limited. Medicament inhalation device. 3,858,583, Cl. 128-266.000.

Halstead, Charles H.: *See—*
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Halstead, Richard J., to General Electric Company. Retainer clip and closure means. 3,858,370, Cl. 52-760.000.

Halwes, Dennis R., to Textron Inc. Nodal beam inertial flexure. 3,858,831, Cl. 244-17.270.

Hamamoto, Hiroshi: *See—*
Kimura, Takashi; Majima, Azusa; and Hamamoto, Hiroshi, 3,859,085.

Hamb, Frederick L.; and Wilson, John C., to Eastman Kodak Company. FILM FORMING POLYMERIC COMPOSITIONS OF 7,7-DIMETHYL-7H-DIBENZO [c,h]XANTHENE COMPOUNDS. 3,859,254, Cl. 260-49.000.

Hamb, Fredrick L.; and Wilson, John C., to Eastman Kodak Company. Film forming polymeric compositions. 3,859,097, Cl. 96-87.00R.

Hampton, Edward L.: *See—*
Crum, Donald; Goff, McKinley; and Hampton, Edward L., 3,858,932.

Hampton, Marshall D. Two-part protective cover for padlocks. 3,858,419, Cl. 70-55.000.

Hanna, Thomas L.: *See—*
Beck, Harold D.; and Hanna, Thomas L., 3,858,644.

Hanser, Paul Edmond. Amphibian vehicle. 3,858,260, Cl. 9-1.00T.

Hansgen, Klaus: *See—*
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Hanson, John Nils: *See—*
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Hara, Akio; Miyake, Masaya; and Kobayashi, Mitsunori, to Sumitomo Electric Industries, Ltd. Cemented carbide intermediate therefor and process for producing the same. 3,859,056, Cl. 29-182.700.

Harada, Akikazu; and Hisada, Hiroshi, to Hitachi, Ltd. Magnetron having spurious signal suppression means. 3,859,558, Cl. 315-39.510.

Harada, Hideo: *See—*
Yamamoto, Hiroaki; Harada, Hideo; Miyaoka, Hiroshi; Tanaka, Minoru; Kubota, Osamu; Nakamura, Shizuo; and Nakamura, Yasusi, 3,859,367.

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Hardtmann, Goetz E. Tricyclic pyrimidinones. 3,859,289, Cl. 260-256.40F.

Haren, Ralph J., to Tenneco Inc. Muffler with rotary gas flow. 3,858,678, Cl. 181-55.000.

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Harman, David John: *See—*
Beasley, Robert Malcolm; Harman, David John; Mainard, Douglas Raymond; and Washington, Derek, 3,859,071.

Harper-Wyman Company: *See—*
Mizerak, Dennis S.; and Stohrer, Charles E., Jr., 3,858,811.

Harrell, Jerald Rice; and Schmiegel, Walter Werner, to du Pont de Nemours, E. I., and Company. Vulcanizable fluoroelastomer. 3,859,259, Cl. 260-77.50R.

Harrington, James A., to General Motors Corporation. Reciprocating rotary engine. 3,858,560, Cl. 123-8.470.

Harris, John Derek: *See—*
Roberts, Maurice; Harris, John Derek; Humpage, Roy William; and Crow, Geoffrey George, 3,859,135.

Harrison, Ian T.: *See—*
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,859,442.

Harrison, Thomas J.; Hellwarth, George A.; and Jaeger, Richard C., to International Business Machines Corporation. Analog to digital converter for electrical signals. 3,859,654, Cl. 340-347.0AD.

Hart, Bernard Eaton. Diaphragm pumps. 3,859,011, Cl. 417-389.000.

Hart, Jack A., to General Motors Corporation. Stratified charge rotary engine. 3,858,558, Cl. 123-8.130.

Hart, Thomas Gordon, to Occidental Energy Development Company. Enclosed electrical energy storage device with halogen absorbing means. 3,859,142, Cl. 136-179.000.

Hartford, Leonard F.: *See—*
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Hartig, Rufus G. Closed pond system for wet process phosphate plants. 3,859,423, Cl. 423-472.000.

Hartmann, Clinton S.; and Birch, Michael J., to Texas Instruments Incorporated. Reflectionless surface wave transducer. 3,859,608, Cl. 333-72.000.

Hartmann, Leonard Joseph, to Chemetron Corporation. Ball valve and the like having locking handle. 3,858,843, Cl. 251-99.000.

Hartmann, Lothar, to Siemens Aktiengesellschaft. Reciprocal synchronization of oscillators of a time multiplex telephone communication network. 3,859,466, Cl. 179-15.0BS.

Hartwimmer, Robert, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of fluorine-containing polymers. 3,859,262, Cl. 260-80.770.

Harvey, Richard F.; and Moore, George E., to Moore Production Specialities, Inc. High speed steel compositions and articles. 3,859,081, Cl. 75-126.00C.

Harwood, Robert George; and Ferdon, Gilbert Douglas, to AMP Incorporated. Electrical connecting members requiring lower insertion and retraction forces and providing for low contact wear. 3,858,957, Cl. 339-17.00L.

Hasty, Turner Elijah, to Texas Instruments Incorporated. Method for encapsulating discrete semiconductor chips. 3,859,180, Cl. 204-16.000.

Hatch, Asa E. Removal of heavy metals from aqueous solutions. 3,859,210, Cl. 210-28.000.

Hatsuta Manufacturing Co., Ltd.: *See—*
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Hattori, Tadashi; Wakamatsu, Hisato; Nakase, Takamichi; and Yoshida, Shuzo, to Nippon Soken, Inc. Electric control system for automobile exhaust emission control systems. 3,859,541, Cl. 307-10.00R.

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Haupt, Heinrich: *See—*
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Hause, Gilbert K., to General Motors Corporation. Unitary spring for stroking transmission servo motor. 3,858,698, Cl. 192-89.00R.

Haverback, Bernard J.: *See—*
Bass, Michael; Dwyer, Richard M.; and Haverback, Bernard J., 3,858,577.

Havstad, Harold R., to Hudson Oxygen Therapy Sales Company. Outboard heating device. 3,859,398, Cl. 261-141.000.

Hawkins, Curtis Owen, to du Pont de Nemours, E. I., and Company. Spinneret capillary metering plugs. 3,859,031, Cl. 425-461.000.

Haws, Gerald W.; Knight, Bruce L.; and Rhudy, John S., to Marathon Oil Company. Well stimulation with polyamine solutions. 3,858,657, Cl. 166-305.00R.

Hayakawa, Yoshikazu: *See—*
Matsui, Shunji; Hirashima, Kenzo; Hayakawa, Yoshikazu; and Marumo, Nagayuki, 3,859,482.
Haynes, Larry E. Valve. 3,858,841, Cl. 251-43.000.
Haysom, Derek W. R.; and Wells, William. Method of operating a basic open hearth furnace. 3,859,078, Cl. 75-59.000.
Haythornthwaite, James, to Scapa Dryers (Canada) Ltd. Moisture control of felts and webs in papermaking systems. 3,859,163, Cl. 162-198.000.
Hayton, Eugene P.: *See—*
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Hazemeijer B. V.: *See—*
Clason, Jan Christiaan, 3,859,611.
Hazen, Gretz L., to DEC International, Inc. Food processing vat. 3,858,855, Cl. 259-104.000.
Heaney, James J., to Anthony's Manufacturing. Defrosting system for refrigerator doors. 3,859,502, Cl. 219-218.000.
Heat and Control, Inc.: *See—*
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Heberlein & Co. AG: *See—*
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Hechtel, Richard, to Siemens Aktiengesellschaft. Electron beam generator for transit-time electron discharge tubes. 3,859,552, Cl. 313-449.000.
Hecker, Eugene L.: *See—*
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Heer, Alfred; and Renner, Alfred. Methylolglycidyl ethers of polyvalent phenol ethers. 3,859,255, Cl. 260-51.0EP.
Heft, Eugene J., to Sanders Associates, Inc. Clutter suppression circuit. 3,859,659, Cl. 343-7.700.
Hein, Allyn J., to Caterpillar Tractor Company. Pressure relief expansion chamber for hydrostatic motors. 3,858,483, Cl. 91-6.500.
Heinemann, Otto; Schmits, Heinz-Herbert; and Schulz, Hans, to Polysius AG. Planetary cooler for rotary tube furnace. 3,859,039, Cl. 432-80.000.
Heinrich Koppers Gesellschaft mit beschrankter Haftung: *See—*
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Heinzen, Robert A.: *See—*
Morley, Edwin R.; and Heinzen, Robert A., 3,859,548.
Heisler, Raymond A. Method for automatically feeding and erecting folded cartons. 3,858,490, Cl. 93-53.00M.
Hellwarth, George A.: *See—*
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Helm, Uwe, to U.S. Philips Corporation. Optical apparatus for establishing logical relationships and for storing. 3,859,639, Cl. 340-173.0LS.
Hemmelgarn, Donald J.: *See—*
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Henningsen, Lee A., to Firetrol, Inc. Fire pump control apparatus. 3,859,565, Cl. 317-13.00R.
Henry, Ormond L.; and Strader, Don S., to Lear Siegler, Inc. Air spring system and damped air valve therefor. 3,858,903, Cl. 280-124.00F.
Hepworth, Paul, to Imperial Chemical Industries Limited. Production of polyalkenmers from monomers of norbornene structure containing polar groups. 3,859,265, Cl. 260-85.50R.
Herbrand, Lois A.; and Spector, George. Electrically heated boiler with perforated rack and an adjustable heat shield. 3,859,505, Cl. 219-433.000.
Hercules Incorporated: *See—*
Bednarski, Theodore M.; and Hauer, Harold, 3,859,193.
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Hergenrother, William L.; and Ambrose, Richard J., to Firestone Tire & Rubber Company, The. Method of making nylon constituent block copolymers of predetermined pliability at low temperatures. 3,859,382, Cl. 260-859.000.
Herluison, Jean-Claude: *See—*
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Hermsen, Manfred. Filter device for producing filtered coffee beverages. 3,858,493, Cl. 99-306.000.
Hertzberg, Martin; Litton, Charles D.; Murphy, John N.; and Sacks, H. Kenneth, to United States of America, Interior. Optical detection system. 3,859,520, Cl. 250-209.000.
Hery, Jean-Francois: *See—*
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Herz, Jack L.; and Chaberek, Stanley, to Stauffer Chemical Company. Ethylenediaminetetraacetic acid anhydride derivatives. 3,859,337, Cl. 260-500.50H.
Herzner, Karl Heinz, to U.S. Philips Corporation. Triangular generator. 3,859,603, Cl. 328-181.000.
Hess, Hans-Jurgen E.; and Nelson, Roger P., to Pfizer Inc. 18 Betaglycyrrhetinic acid amides. 3,859,328, Cl. 260-468.500.
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Hetterich, George C., to Singer Company, The. Combination sewing machine housing and carrying case. 3,858,954, Cl. 312-244.000.
Hettrick, La Verne A., to International Feed Improvement Association, Inc. Method and product liquid molasses with diatomaceous earth. 3,859,448, Cl. 426-96.000.
Heurtley, John Crampton, to Xerox Corporation. Methods of thermoplastic xerography and apparatus therefor. 3,858,973, Cl. 355-9.000.
Hewson, Kenneth E.: *See—*
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Hibbing, Edwin Ernst; and Preisler, Frank, to Johns-Manville Corporation. Method for cutting holes in roofing sheet material. 3,858,469, Cl. 83-37.000.
Hibbs, Eugene B., Jr.; and Swire, Roger, IV, to Digilin Incorporated. Amplifying means and system. 3,859,605, Cl. 330-30.00R.
Hickman, Stephen L.; and Griewahn, Carl O. Heat exchanger and method of manufacture therefor. 3,858,647, Cl. 165-171.000.
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Hiersig, Heinz M.; Hansgen, Klaus; and Sudhoff, Wolfgang, to Mannesmann-Meer Aktiengesellschaft. Shaft coupling for transmission of axial thrust and torque. 3,858,411, Cl. 64-1.00R.
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Aignesberger, Alois; Rosenbauer, Hans-Gunter; and Hiendl, Heriberg, 3,859,316.
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Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Korumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 3,859,293.
Higbea, George E. Anchor bracket for furniture springs. 3,858,858, Cl. 267-110.000.
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Hill, H. Wayne, Jr.; and Moberly, Charles W., to Phillips Petroleum Company. Preparation of nitrile polymers with aralkyl mercaptans as polymerization modifiers. 3,859,388, Cl. 260-879.000.
Hiller, Montague. Water closets. 3,858,813, Cl. 241-46.020.
Hindermann, Peter; and Meindl, Hubert, to Ciba-Geigy AG. 1 Amino-4-(4,5 dialkyl-3-sulfamoyl-phenylamino) anthraquinone-2-sulfonic acids. 3,859,283, Cl. 260-247.10A.
Hines, Lawrence A., Jr.; and Gaudette, Walter M., Jr., to General Motors Corporation. Vehicle brake leak testing system and method. 3,858,436, Cl. 73-39.000.
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Hirosawa, Tomio; and Otsuka, Susumu, to Cabin Kogyo Kabushiki Kaisha. Slide projector. 3,858,972, Cl. 353-118.000.
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Hochreuter, Richard, to Sandoz Ltd. a/k/a Sandoz AG. Antistatic finishing of plastic molding materials. 3,859,378, Cl. 260-78.00S.

Hocker, Jurgen; and Merten, Rudolf, to Bayer Aktiengesellschaft. Dioxazolone isocyanates. 3,859,299, Cl. 260-307.00A.

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Hoerbiger Ventilwerke: *See—*
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Hollenton, Frank; and Ingalls, John L., to AMF Corporation. Method and apparatus for manipulating rod-like articles. 3,858,708, Cl. 198-20.00C.

Hollingsworth, John D. Apparatus for removing trash from carded fibers. 3,858,276, Cl. 19-98.000.

Holmes, Donald E.: *See—*
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Holmes, Robert S.; and Katz, Walter M., to ComSci Data, Inc. Method and apparatus for decoding binary digital signals. 3,859,631, Cl. 340-146.10R.

Holstead, Robert D.; and Wyman, Charles E., to Monsanto Company. Apparatus for separating high from low viscosity fluids. 3,859,217, Cl. 210-523.000.

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Hood, Andrew G., III.; Adamson, David L.; Andersen, Terrell N.; and Richards, Kenneth J., to Kennecott Copper Corporation. Calcium containing lead alloy anodes for electrowinning. 3,859,185, Cl. 204-108.000.

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Horbury, Eric Anthony; and Evetts, David Ronald, to Rolls-Royce (1971) Limited. Method of brazing. 3,858,303, Cl. 29-490.000.

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Horn, Anton; Thielmann, Klaus; Pfeifer, Otto, deceased; and Schilling, Klaus. Device for biochemical and enzymatic analysis. 3,859,050, Cl. 23-253.00R.

Horn, John Gerhard; and Melin, John A., to Arbman Development AB. Model flight simulator. 3,858,347, Cl. 46-76.000.

Horne, Ottis J., Jr.; and Smith, Wesley E., to United States of America, Atomic Energy Commission. Method for reproducibly controlling the crystallinity of synthetic graphite. 3,859,422, Cl. 423-448.000.

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Horvath, Richard A.; Stumphauzer, William C.; and Hogstrom, Edwin F., to Nordson Corporation. Method and apparatus for applying compound and post end repair coating to can ends. 3,859,113, Cl. 117-43.000.

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Houlihan, William J.; and Nadelson, Jeffrey. Benzylidene substituted bicyclic and tricyclic compounds. 3,859,356, Cl. 260-570.900.

Howa Kagyo Kabushiki Kaisha: *See—*
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Howard, Bernard Peter Fox; and Carter, Ronald David. Floor-engaging mobile support devices for articles of furniture or the like. 3,858,271, Cl. 16-45.000.

Howard, Durrell Unger. Self-contained sanitary closet for vehicles or the like. 3,858,249, Cl. 4-10.000.

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Hsu, John S. Extruder screw. 3,858,856, Cl. 259-191.000.

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Hucke, Edward E. Methods of producing carbonaceous bodies and the products thereof. 3,859,421, Cl. 423-445.000.

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Hungerford, Daniel Comstock, to Brunswick Corporation. Twin fluke anchor having removable flukes. 3,858,543, Cl. 114-208.00R.

Hun., Howard C., to Improved Machinery, Inc. Filtering apparatus and methods. 3,859,213, Cl. 210-73.000.

Hunter, Terry Albert, to Canadian General Electric Company Limited. Oil seal barrier for jacks. 3,858,458, Cl. 74-606.000.

Hurd, Leslie A. Method and apparatus of outdoor position locating. 3,858,326, Cl. 33-273.000.

Hurst, Eric Kenneth. Infants feeding bottles. 3,858,738, Cl. 215-11.00C.

Hurst, Robert Gillander; Pinner, Alan Leonard; and Kyte, Colin Trevor, to Fosroc A.G. Apparatus and process for the treatment of timber. 3,859,046, Cl. 21-65.000.
Hurwitz, Arthur. Aid for relieving or preventing tennis elbow injury. 3,858,881, Cl. 273-29.00A.
Hutchings, David A., to Goodyear Tire & Rubber Company, The. Process of preparing p-benzoquinone. 3,859,317, Cl. 260-396.00R.
Hutchinson, Francis Gowland, to Imperial Chemical Industries Limited. Crosslinked polyurethanes from polyurethane precursors and vinyl monomers. 3,859,381, Cl. 260-859.00R.
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Jahnsen, Vilhelm J.; Bloom, William G.; and Campen, Charles F., Jr., to California Institute of Technology. System for and method of extract concentration and direct injection into a chromatographic instrument. 3,859,209, Cl. 210-26.000.

Jammet, Jean, to Saft-Societe Des Accumulateurs Fixes Et De Traction. Cylindrical electrochemical cells. 3,859,137, Cl. 136-107.000.

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Jansen, Harvey B.; and Adams, Milton R., both of, to Garrett Corporation, The. Power turbine nozzle control system. 3,858,390, Cl. 60-39.140.

Janssen, Frits Jacques; and Lehmann, Arnold, to U.S. Philips Corporation. Device for simulating the original shape of a signal which is distorted by peaks. 3,859,602, Cl. 328-162.000.

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Jaspers, Hans; and Torenbeek, Reinder. Pastes for use in hardening putties containing organic peroxides. 3,859,240, Cl. 260-29.60R.

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Jennings, Harold J.; and Kenny, Charles Paul, to Canadian Patents and Development Limited. Meningococcal antigens. 3,859,434, Cl. 424-92.000.

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Jett, Marion Barney, to Dresser Industries, Inc. Dual string hydraulically actuated oil well packer. 3,858,648, Cl. 166-120.000.

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Johnson, Anna M., to Raymond Lee Organization, The, a part interest. Diaper for male baby. 3,858,584, Cl. 128-286.000.

Johnson, David W.; and Kell, Ralph W., to Goodyear Tire & Rubber Company, The. Belt track for vehicles. 3,858,948, Cl. 305-35.0EB.

Johnson, James William; Peterson, John E.; and Reich, Charles, to Minnesota Mining and Manufacturing Company. Pre-preg materials, chemically integral composite foam structures prepared therefrom, and methods of preparation. 3,859,162, Cl. 161-160.000.

Johnson & Johnson: *See—*
Campbell, Roger G.; Goff, Richard E., Jr.; and Guay, Normand D., 3,858,622.

Johnson, Norman B., to FMC Corporation. Pitch control for all terrain vehicle. 3,858,901, Cl. 280-96.20R.

Johnson Service Company: *See—*
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Johnstone, David C.: *See—*
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Jones, Alan Richardson, to Coulter Electronics, Inc. Sample mixing and metering apparatus. 3,858,450, Cl. 73-423.00A.

Jones, Arthur A. Weight lifting exercising devices. 3,858,873, Cl. 272-58.000.

Jones, Charles: *See—*
Myers, David M.; and Jones, Charles, 3,858,557.

Jones, Marvin A.; and Galuska, Joseph, to FMC Corporation. Apparatus for controlling traveling bridges. 3,859,580, Cl. 318-280.000.

Jones, Michael David: *See—*
Fisher, Leslie George; and Jones, Michael David, 3,858,412.

Jones, W. Dale. Point contact roller band switch. 3,859,488, Cl. 200-153.000.
Jonsson, Nils Ake; Merenyi: Ferenc; and Westlund, Lars-Erik, to A B Kabi. 3,3'Disubstituted benzidine derivatives. 3,859,341, Cl. 260-518.00R.
Jorgensen, Gunnar, to A/S Atlas; and F. L. Smith & Co. A/S. Furnace for incinerating solid and liquid waste. 3,858,532, Cl. 110-7.00S.
Jorgensen, William A. W.: *See—*
McBurnie, Stuart G.; Jorgensen, William A. W.; and Rocher, Michel L. E., 3,858,918.
Joseph Lucas (Industries) Limited: *See—*
Roberts, Maurice; Harris, John Derek; Humpage, Roy William; and Crow, Geoffrey George, 3,859,135.
Joyce, John E., to International Equipment Company. Method for washing blood cells. 3,858,795, Cl. 233-14.00R.
Jurasova, Nina Vasilievna: *See—*
Kapitanov, Nikolai Nikolaevich; Petrova, Natalia Petrovna; Jurasova, Nina Vasilievna; and Kharchenko, Vladimir Petrovich, 3,858,783.
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kimura, Takashi; Majima, Azusa; and Hamamoto, Hiroshi, 3,859,085.
Kadono, Yahiko; Nakazato, Teruo; Miura, Eiichi; and Kitamura, Thunekathu, to Nippon Oil Company Ltd. Paved roadbed. 3,858,999, Cl. 404-27.000.
Kahn, Manfred, to Sprague Electric Company. Process for semiconductive ceramic body. 3,859,403, Cl. 264-56.000.
Kai, Fumio: *See—*
Sekizawa, Yasuharu; Seki, Shigeo; Nomiya, Bunzo; Koeda, Takemi; Kai, Fumio; Akai, Naotoshi; Yusa, Yasushi; and Fukuyasu, Fuguaki, 3,859,362.
Kai, Tsunetoshi; Inoue, Mitsuhiro; Yoshida, Matuo; and Ueda, Junichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Relief structures prepared from photosensitive compositions. 3,858,510, Cl. 101-395.000.
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, to Hoffmann-La Roche Inc. Dopa derivatives. 3,859,331, Cl. 260-471.00C.
Kaizaki, Hiroyuki; and Kato, Takeshi. Dust seal for endless tracks of a tractor. 3,858,947, Cl. 305-11.000.
Kajima Kensitsa Kabushiki Kaisha: *See—*
Muto, Kiyoshi; Yamamoto, Yasuhisa; Toyoda, Yoshinori; Azemi, Shozo; Okano, Shigeru; Masuyama, Kenya; Aihara, Seitaro; Ito, Takao; Ogawa, Isamu; and Harada, Mitsumasa, 3,858,318.
Kajiwara, Toshiyuki; Fukui, Kakichi; Mita, Katsuji; and Yamauchi, Akira, to Hitachi, Ltd. Split type multistage rolling mill. 3,858,424, Cl. 72-242.000.
Kamada, Masayuki: *See—*
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Kamen, Dean. Medication injection device. 3,858,581, Cl. 128-218.00A.
Kammer, Steven Joseph. Snow molding apparatus. 3,859,029, Cl. 425-441.000.
Kandler, Joachim; Merkenich, Karl; Henning, Klaus; Vogt, Wilhelm; Auer, Eberhard; and Glaser, Hermann, to Hoechst Aktiengesellschaft. Detergent composition containing, as a builder, the sodium salt of glycerol tricitrate. 3,859,224, Cl. 252-135.000.
Kanebo Ltd.: *See—*
Koide, Tohru; Hattori, Takahiro; Ohno, Yoshio; and Maruya, Mitsuru, 3,858,329.
Kaneko, Tamaki; and Mizuno, Katsumi, to Ricoh Co., Ltd. Offset printing machine. 3,858,508, Cl. 101-132.000.
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Kapitanov, Nikolai Nikolaevich; Petrova, Natalia Petrovna; Jurasova, Nina Vasilievna; and Kharchenko, Vladimir Petrovich. Surgical instrument for stitching up tissues with lengths of suture wire. 3,858,783, Cl. 227-108.000.
Kaplan, Leon M.: *See—*
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Karady, Sandor: *See—*
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Karie, Earl K.; and Kuttruff, Manfred K., to Brass Craft Manufacturing Company. Transition pipe connection. 3,858,914, Cl. 285-238.000.
Kashio, Toshio, to Casio Computer Co., Ltd. Arithmetic operation and trailing zero suppression display unit. 3,859,514, Cl. 235-156.000.
Kashio, Toshio, to Casio Computer Co., Ltd. Switching device. 3,859,612, Cl. 335-205.000.
Kashiwase, Koji: *See—*
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Kato, Takeshi: *See—*
Kaizaki, Hiroyuki; and Kato, Takeshi, 3,858,947.
Katsuyama, Harumi; and Ono, Hisatake, to Fuji Photo Film Co., Ltd. Spiro(indoline-2,5'-pyrazoline)derivatives. 3,859,303, Cl. 260-310.00D.
Katz, Walter M.: *See—*
Holmes, Robert S.; and Katz, Walter M., 3,859,631.
Kaufman, John W., to Factory Mutual Research Corporation. Piping for fire protection systems. 3,858,618, Cl. 138-149.000.
Kautz, Robert F.; Bourgeault, Leo B.; and Lane, Raymond G., to Bendix Corporation, The. Circuit for controlling the charge on a capacitor from a variable voltage source. 3,859,582, Cl. 320-1.000.
Kavick, Edward M.: *See—*
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Kawakami, Genichi, to Nippon Gakki Seizo Kabushiki Kaisha. Percussion musical instrument having resonators of rectangular cross-section. 3,858,477, Cl. 84-410.000.
Kawamura, Tsutomu: *See—*
Murakami, Masuo; Ichikawa, Kaichiro; Imai, Kazuo; Sato, Norio; Ito, Noriki; Oka, Yoshihiko; Kawamura, Tsutomu; and Ozasa, Teruaki, 3,859,277.
Kawano, Reijiro; Goda, Kazuhiro; Yamakawa, Hiroshi; and Ohhara, Osamu, to Kurosawa Tele-Communication Limited. Tape controlled line spacing and form feed mechanism. 3,858,704, Cl. 197-133.00R.
Kay, Christopher John, to Rolls-Royce (1971) Limited. Method for etching aluminium alloys. 3,859,149, Cl. 156-22.000.
Kayano, Tatsuo: *See—*
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Yanagimachi, Akio; Yamane, Hisakichi; Sawabe, Eiichi; Uehara, Takashi; and Yoshino, Takehiko, 3,859,458.
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Keblys, Kestutis A., to Ethyl Corporation. Compound and method. 3,859,359, Cl. 260-604.0HF.
Keene Corporation: *See—*
May, Larry A., 3,858,758.
Keidl, Steven D.; and Nelson, James F., to International Business Machines Corporation. Magnetic coil driver circuit. 3,859,572, Cl. 317-148.50R.
Kell, Nathaniel B., to General Motors Corporation. Shift inhibitors for power transmission. 3,858,840, Cl. 251-31.000.
Kell, Ralph W.: *See—*
Johnson, David W.; and Kell, Ralph W., 3,858,948.
Keller, Karlfried; Schnee, Karl; and Tichy, Dieter, to Cassella Farbwerke Mainkur Aktiengesellschaft. Preparation of low molecular weight etherified methylol ureas and thioureas. 3,859,351, Cl. 260-552.00R.
Keller, Wolfgang, to Siemens Aktiengesellschaft. Apparatus for controlled doping of semiconductor crystals. 3,858,549, Cl. 118-49.100.
Kelly Company, Inc.: *See—*
Kuhns, Robert C.; and Metro, Robert D., 3,858,264.
Kemp, Fred S.: *See—*
Dews, George H.; Eichner, Daniel; and Kemp, Fred S., 3,859,139.
Kemper, Kate. Magazine for stackable trays. 3,858,732, Cl. 214-8.50K.
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Binard, William J.; and Dye, John F., 3,858,572.
Kendall, Ernest G.: *See—*
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Kennametal Inc.: *See—*
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Kennecott Copper Corporation: *See—*
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Kennedy, Theodore R., to Inductotherm Corporation. Harmonic and power factor compensation means and method for power systems controlled by a non-linear device. 3,859,542, Cl. 307-88.00R.
Kenney, Edward Joseph: *See—*
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Kenny, Charles Paul: *See—*
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Kenyon, Andre J., to Schaefer Corporation. Refrigerated cabinet having detachable frost shield. 3,858,408, Cl. 62-283.000.

Kessler, Hartmut, to Siemens Aktiengesellschaft. Electrical RC element. 3,859,592, Cl. 323-78.000.

Kessler, Hyman: *See—*
Jarzynski, Jacek; McLelland, Howard B.; and Kessler, Hyman, 3,858,437.

Ketchledge, Raymond Waibel: *See—*
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Kharchenko, Vladimir Petrovich: *See—*
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Kibler, Richard W., to Firestone Tire & Rubber Company, The. Polycarbonamide reinforced non-flatspotting tires having yarns penetrated with aliphatic organic, hydroxylated plasticizer and their manufacture. 3,858,636, Cl. 152-330.000.

Kimura, Takashi; Majima, Azusa; and Hamamoto, Hiroshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for producing iron-base sintered alloys with high density. 3,859,085, Cl. 75-204.000.

King, Gerald M.: *See—*
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Kinninger, Warren G.: *See—*
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Kipping, Joachim: *See—*
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Kirby, Russell B., Jr.; and Wing, Stephen C., to Minnesota Mining and Manufacturing Company. Metal casting in thin walled molds. 3,858,641, Cl. 164-251.000.

Kirk, Donald, Jr., to Digital Communications Inc. Selective video reception inhibiting apparatus. 3,859,457, Cl. 178-5.100.

Kirkner, Rodney H., Jr.: *See—*
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Kirschling, Thomas J., to FMC Corporation. Self-adjusting clutch or brake. 3,858,700, Cl. 192-111.00A.

Kishbaugh, Clyde Davis: *See—*
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Kishino, Shigeo; Kudamatsu, Akio; Sumi, Shozo; and Shiokawa, Kozo, to Bayer Aktiengesellschaft. O-phenyl-s-propyl-n-alkyl phosphoroamide dithioates. 3,859,393, Cl. 260-949.000.

Kita, John F.; and Johnstone, David C., to Kennametal Inc. Excavating tool. 3,858,671, Cl. 175-410.000.

Kitaeva, Valentina Vasilievna: *See—*
Smirnov, Mikhail Dmitrievich; Sergeev, Ivan Demyanovich; Brod, Ilya Iosifovich; Kharman, Mikhail Nikolaevich; Puzynya, Leonid Vasilievich; Veinberg, Ikhil Abramovich; Zakharova, Ekaterina Georgievna; Lapshin, Vladimir Pavlovich; Kitaeva, Valentina Vasilievna; Petrov, Leonid Alexandrovich; Kukushkin, Vladimir Maximovich; Stukalov, Vladimir Nikolaevich; Smirnov, Pavel Mikhailovich; Novokreschenov, Viktor Timofeevich; Shushkevich, Eduard Nikolaevich; Atkarsky, Anatoly Alexandrovich; Okun, Boris Davydovich; Karasik, Vladimir Zakharovich; and Khodosova, Vera Nikolaevna, 3,858,263.

Kitamura, Masahiro; Suzuki, Hiroshi; and Sato, Mikio, to Hitachi, Ltd.; and Hitachi Chemical Company, Ltd. Epoxy composition containing phenolic novolacs tetra substituted borate anions and a phosphonium, arsonium, quaternary ammonium cation, or tetra substituted borates of imidazole. 3,859,379, Cl. 260-831.000.

Kitamura, Thunekathu: *See—*
Kadono, Yahiko; Nakazato, Teruo; Miura, Eiichi; and Kitamura, Thunekathu, 3,858,999.

Klappert, Willi, to General Electric Company. Method of making a crimp locked outer turn for induction core. 3,858,311, Cl. 29-609.000.

Klasky, Saul W., to G. Whitfield Richards Co. Method of cleaning and lubricating copper. 3,859,132, Cl. 134-2.000.

Klavonich, Frank J., to Klavonick, Rose M. Rear wheel brake adjustment tool. 3,858,463, Cl. 81-3.00R.

Klavonick, Rose M.: *See—*
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Kleefeld, Frank; and Gmeiner, Gunter, to Arn. Kiekert Sohne; and Daimler-Benz Aktiengesellschaft. Motor vehicle door latch. 3,858,919, Cl. 292-216.000.

Kleiber, Armin, to Mannesmann-Kleiber GmbH. Apparatus for forming a batch of concrete panels. 3,859,021, Cl. 425-186.000.

Klein, Bernard, to Hoffmann-La Roche Inc. Standard for serum cholesterol determination. 3,859,047, Cl. 23-230.00B.

Klein, Carl F.; and Bailey, James R., to Johnson Service Company. Intrusion detection means having cycle counting interlock response control means. 3,859,656, Cl. 343-5.0PD.

Klein, Paul R.: *See—*
Luitwieler, Samuel H., Jr.; Klein, Paul R.; and Robinson, Dale Dario, 3,859,528.

Kleiner, Hans-Jerg, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Dialkyl-phosphinyl-alkane sulfonates. 3,859,339, Cl. 260-513.00R.

Kleinhans, Siegfried; and Kummlee, Hans, to Siemens Aktiengesellschaft. Drive shaft flange coupling structure having a fixed shear speed. 3,858,987, Cl. 403-2.000.

Klier, Kamil: *See—*
Shen, Josephine H.; Klier, Kamil; and Zettlemoyer, Albert C., 3,858,805.

Klimek, Boleslaw, to Berg Manufacturing Company, The. Relay valve. 3,858,610, Cl. 137-627.500.

Klimov, Alexandr Galikovich: *See—*
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Klimov, Boris Petrovich: *See—*
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Klines, Zdenek: *See—*
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Kloek, Arvid E.; and Scott, Myrsyl Walter, to Honeywell Inc. Alloy junctions in mercury cadmium telluride. 3,858,306, Cl. 29-572.000.

Klohr, Robert E. N.: *See—*
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Knapsack Aktiengesellschaft: *See—*
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Knechtel, Wilhelm; and Petersdorf, Gerhard, to Canon Kabushiki Kaisha. Copying apparatus. 3,858,975, Cl. 355-50.000.

Knight, Bruce L.: *See—*
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Rhudy, John S.; and Knight, Bruce L., 3,858,652.

Knocke, Louis C.; and Smith, William Novis, Jr., to Foote Mineral Company. Flotation of aluminosilicate, phosphate and fluoride ores. 3,859,207, Cl. 209-166.000.

Knocke, Louis C.; and Smith, William Novis, Jr., to Foote Mineral Company. Flotation of lithium aluminosilicate ores. 3,859,208, Cl. 209-166.000.

Knowles, Carl Harry: *See—*
Fendley, James R.; and Knowles, Carl Harry, 3,859,072.

Knudsen, George A., Jr., to Esso Research and Engineering Company. Direct stabilization of sulfonated polymers. 3,859,264, Cl. 260-45.85R.

Kobari, Sadami: *See—*
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Kobayashi, Mitsunori: *See—*
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Kobayasi, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Apparatus for epitaxial growth from the liquid state. 3,858,551, Cl. 118-64.000.

Koch, Wolfgang: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,859,331.

Kochhar, Rajindar K.; Osborn, Myron D.; and Rowatt, Robert J., to Gulf Research & Development Company. Simplified process for manufacture of catalyst component. 3,859,231, Cl. 252-429.00R.

Koeda, Takemi: *See—*
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Koehler, Lyle E. Emergency signal warning system. 3,859,623, Cl. 340-34.000.

Koehring Company: *See—*
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Koehring, Richard G., to Waymar Industries, Inc. Universal mounting bracket for laminated seating booths. 3,858,933, Cl. 297-158.000.

Koelichen, Harald, Jr., to Standardgraph Filler & Fiebig GmbH. Nib tube for drawing pens. 3,859,190, Cl. 204-192.000.

Kohgame, Hisashi: *See—*
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Kohler, George O.: *See—*
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Kohmura, Isao; and Futaki, Kiyoshi, to Mitsubishi Paper Mills, Ltd. Water resistant heatsensitive recording composition containing an ethyleneimine hardener. 3,859,112, Cl. 117-36.800.

Koide, Tohru; Hattori, Takahiro; Ohno, Yoshio; and Maruya, Mitsuru, to Kanebo Ltd. Process and apparatus for drying porous material. 3,858,329, Cl. 34-1.000.

Koizumi, Noboru: *See—*
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Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
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Kollar, John, to Halcon International, Inc. Method of producing polyhydric compounds such as ethylene glycol by disproportionation of its monoacetate. 3,859,368, Cl. 260-635.00R.

Kollerov, Vyacheslav Viktorovich: *See—*
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Kollonitsch, Janos; and Doldouras, George A., to Merck and Co., Inc. 7-Chloro-1,3-dihydro-5-2-polyfluoroalkoxyphenyl)-2h-1,4-benzodiazepin-2-ones. 3,859,276, Cl. 260-239.30D.

Kolm, Hubert Ernest: *See—*
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Kolmar Laboratories, Inc.: *See—*
Jacobi, Otto K., 3,859,436.

Komatsu, Akira; Akutagawa, Susumu; and Someya, Taichi, to Takasago Perfumery Co., Ltd. Process for the production of squalene-type-hydrocarbons. 3,859,374, Cl. 260-677.00R.

Komendantov, Jury Mikhailovich: *See—*
Kushnarenko, Sergei Grigorievich; Kononenko, Vadim Grigorievich; Kollerov, Vyacheslav Viktorovich; Morgolenko, Anatoly Sergeevich; Alimochkin, Vladimir Mikhailovich; Orekhov, Albert Ivanovich; Komendantov, Jury Mikhailovich; Vasilchenko, Lev Petrovich; Parkhomenko, Nikolai Mikhailovich; and Anistarov, Nikolai Nikolaevich, 3,858,430.

Komiyama, Kazuo; and Niioka, Takeharu, to Tokyo Shibaura Electric Co., Ltd. Speed alarm system for an automobile. 3,859,629, Cl. 340-62.000.

Kondo, Susumu; Sakai, Tadao; Ohi, Reiichi; Sugiyama, Mitsunori; and Numata, Mitsuo, to Fuji Photo Film Co., Ltd. Silver halide photographic material containing a hydroxyazaidene and a carboxyl substituted 1,2-dithiolane as stabilizing combination. 3,859,100, Cl. 96-107.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
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Konya, Hideaki, to Nippon Kokuyu Tetsudo. Automatic ticket preparing and examining system employing sequential code. 3,859,507, Cl. 235-61.70R.

Kopp, Warner. Educational game apparatus. 3,858,333, Cl. 35-35.00J.

Koppa, Daniel Anthony: *See—*
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Korematsu, Mikio, deceased: *See—*
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Korotenko, Boris Evdokimovich; Korotenko, Vitaly Borisovich; and Leschina, Sergei Kuzmich. Device for determining the composition of a liquid-gas mixture in the course of mixture preparation. 3,858,447, Cl. 73-196.000.

Korotenko, Vitaly Borisovich: *See—*
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Korumada, Tomoyuki: *See—*
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Kowalski, Hans-Jochen; and Schonfeld, Peter, to Siemens Aktiengesellschaft. Apparatus for monitoring and limiting the speed of turbines. 3,859,007, Cl. 415-30.000.

Kraftco Corporation: *See—*
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Kramer, Gert, to International Standard Electrical Corporation. Apparatus for marking insulated cables. 3,858,544, Cl. 118-8.000.

Kratochvil, Frank: *See—*
Patarini, Leon M.; Pileggi, Frank R.; and Kratochvil, Frank, 3,858,754.

Krebs, Thomas Richard, to RCA Corporation. Stable bonded barrier layer-telluride thermoelectric device. 3,859,143, Cl. 136-205.000.

Kremser, Georg; and Taube, Arnold, to Veba-Chemie AG. Mixtures of bituminous vacuum residues and/or vacuum gas oils and amorphous polyolefins for the manufacture of shaped objects. 3,859,238, Cl. 260-28.5AS.

Krenzer, John: *See—*
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Kresge, James S., to General Electric Company. Overvoltage surge arrester with improved voltage grading circuit. 3,859,569, Cl. 317-68.000.

Krings, Josef. Sheeting arrangement. 3,858,399, Cl. 61-41.00A.

Kriofsky, Thomas A.; and Kaplan, Leon M. Inductively coupled transmitter-responder arrangement. 3,859,624, Cl. 340-38.00L.

Kristensson, Ove; and Ridder, Gunna Olof August, to Landstingens Inkopscentral. Chair having leg and foot supporting means. 3,858,938, Cl. 297-429.000.

Kronseder, Hermann: *See—*
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Krupa, Vernon J., to Extrusion Dies, Incorporated. Adjusting mechanism for restrictor bar of a slot extrusion die. 3,859,032, Cl. 425-466.000.

Krylov, Vladimir Konstantinovich: *See—*
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Kuhfuss, Herbert F.; and Jackson, Winston J., Jr., to Eastman Kodak Company. Poly(ester-amide). 3,859,251, Cl. 260-47.0CZ.

Kuhfuss, Herbert F.: *See—*
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Kuhns, Robert C.; and Metro, Robert D., to Kelly Company, Inc. Safety lock mechanism for a dockboard. 3,858,264, Cl. 14-71.000.

Kuihara, Kenzo: *See—*
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Kuki, Nobuyuki, to Aisin Seiki Kabushiki Kaisha. Vehicle door handle assembly. 3,858,921, Cl. 292-336.300.

Kukushkin, Vladimir Maximovich: *See—*
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Kummlee, Hans: *See—*
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Kunkle, John Philip; and Smith, Robert E., to AMP Incorporated. Strain relief means for electrical connectors. 3,858,960, Cl. 339-103.000.

Kunnen, Hubertus M. J. J.: *See—*
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Kusaka, Kunio; Osawa, Makoto; Hagiwara, Yoshitoshi; Sekine, Tomio; and Takagi, Yoshiaki, to Honda R & D Co., Ltd.; and Tokushu Seiko Co., Ltd. Cast alloy for valve seat-insert. 3,859,083, Cl. 75-128.00A.

Kushnarenko, Sergei Grigorievich; Kononenko, Vadim Grigorievich; Kollerov, Vyacheslav Viktorovich; Morgolenko, Anatoly Sergeevich; Alimochkin, Vladimir Mikhailovich; Orekhov, Albert Ivanovich; Komendantov, Jury Mikhailovich; Vasilchenko, Lev Petrovich; Parkhomenko, Nikolai Mikhailovich; and Anistarov, Nikolai Nikolaevich. Repeated-action single-impact hammer. 3,858,430, Cl. 72-430.000.

Kuske, Albrecht; and Wanders, Dieter, to Swiss Aluminium Ltd. Extrusion press tool for the production of hollow sections. 3,858,426, Cl. 72-269.000.

Kuts, Mathew, to B. F. Goodrich Company. Fabric cutting. 3,858,474, Cl. 83-424.000.

Kuttruff, Manfred K.: *See—*
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Kuzmin, Sergei Vladimirovich: *See—*
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Lacrex Brevetti S.A.: *See—*
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Lacroix, Daniel. Ski binding. 3,858,895, Cl. 280-11.35T.

Ladany, Shaul P. Temperature control device. 3,859,616, Cl. 337-300.000.

Ladin, Eli M.; and Green, Paul D., to Federal-Mogul Corporation. Method of making a ball bearing assembly. 3,858,288, Cl. 29-148.40A.

Lagowski, Joseph V., to Fairchild Incorporated. Method of advancing a continuous mining machine and apparatus therefor. 3,858,940, Cl. 299-18.000.

Laing, Graham Sterling: *See—*
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Lal, Joginder: *See—*
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Lambert, John Eric; and Vasey, Charles Henry, to Imperial Chemical Industries Limited. Purification process. 3,859,329, Cl. 260-465.80R.

Lambert, Robert L., to GTE Sylvania Incorporated. Method of purifying refractory oxides of aluminum and zirconium. 3,859,426, Cl. 423-592.000.

Landers, Jerry L., to Servend Distributors, Inc. Dispensing apparatus. 3,858,765, Cl. 222-413.000.

Landstingens Inkopscentral: *See—*
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Lane, Raymond G.: *See—*
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Lang, David Vern, to Bell Telephone Laboratories, Incorporated. Method for measuring traps in semiconductors. 3,859,595, Cl. 324-158.00D.

Lang, Robert S.; and Carnot, Robert L., to L. F. Lang & Son Pools, Inc. Filtration apparatus. 3,859,214, Cl. 210-169.000.

Langdon, Richard H., Jr., to Mechtronics Corporation. Cigarette display dispenser. 3,858,757, Cl. 221-92.000.

Langhans, Roy Kenneth, to ICI United States Inc. Stable liquid emulsifier compositions in bread making. 3,859,445, Cl. 426-24.000.

Langsford, Arthur William. High powered rifle breech. 3,858,342, Cl. 42-16.000.

Lanpheer, Richard A., to Brunswick Corporation. Multiple input port internal combustion engine. 3,858,562, Cl. 123-73.00A.

Lapp, Otto: *See—*
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Larkin, Sam. Apparatus for making sand molds. 3,858,639, Cl. 164-194.000.

La Rose, Russell Louis. Means and techniques useful in gyros. 3,858,328, Cl. 33-317.00D.

Larsen, Earl I., to P. R. Mallory & Co., Inc. Tungsten-nickel-iron shaping members. 3,859,055, Cl. 29-182.000.

Larson, Carl T. Attachment device. 3,858,281, Cl. 24-156.00R.

Larson, Charles O., to Charles O. Larson Co.,. Saw horse construction. 3,858,682, Cl. 182-153.000.

Larson, Laurence Eric, to General Electric Company. Contact assembly and method of manufacture of having silver-cadmium oxide contacts affixed to a brass carrier. 3,859,491, Cl. 200-266.000.

Larsson, Folke; and Larsson, Rune. Manhole frame. 3,858,998, Cl. 404-26.000.

Larsson, Rune: *See—*
Larsson, Folke; and Larsson, Rune, 3,858,998.

Laserson, Gregory L.; and Hopper, Harry W., Jr., to Sealectro Corporation. Inertia sensing switch with conductive catch rim means for retaining movable contact in closed position. 3,859,483, Cl. 200-61.45R.

Lassiter, Rush E.; and Saizon, Floyd S., to Floyd Rush Corporation. Apparatus for processing food wastes. 3,858,505, Cl. 100-93.0RP.

Lastochkin, Jury Vasilievich: *See—*
Terentiev, Vladimir Dmitrievich; Dorman, Efim Isaakovich; Izmailova, Julia Sergeevna; Feigin, Viktor Zinovievich; Sandovskaya, Valentina Alexandrovna; Rudina, Galina Jurievna; Lastochkin, Jury Vasilievich; Person, Leonid Matveevich; Saxonov, Gennady Markovich; Yakimovich, Viktor Yakovlevich; and Zaitsev, Vladimir Andreevich, 3,858,556.

Latassa, Frank M.; and Sadoski, Tadius T., to GTE Sylvania Incorporated. Fluorescent lamp containing-amalgam-forming material. 3,859,555, Cl. 313-490.000.

Lau, Gunther; Bradatsch, Edmund; and Brandl, Hermann J. Apparatus for impregnating horizontally transported corrugated paperboard. 3,858,550, Cl. 118-50.000.

Laufer, Siegmar; and Roy, Waldemar, to Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler. Process of making super-dry silicon dioxide. 3,859,420, Cl. 423-335.000.

Laurent, Daniel, to Societe Dauphinoise Electrique. Resiliently supported electrical distribution means for movable current collecting means. 3,858,694, Cl. 191-32.000.

Lauzon, Adrian A. Combination furniture. 3,858,253, Cl. 5-2.00R.

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Lee, Shih-Ying; and Li, Yao-Tzu. Variable capacitance sensor. 3,859,575, Cl. 317-246.000.

Leedy, Hayden M.; McCray, Loren G., Jr.; and Stover, Harry L., to Hughes Aircraft Company. Process for fabricating small geometry semiconductor devices. 3,858,304, Cl. 29-578.000.

Lefkowitz, Leonard R., to Huyck Corporation. Papermakers fabrics. 3,858,623, Cl. 139-425.00A.

Legget & Platt Incorporated: *See—*
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Lehner, Leo L., to Motorola, Inc. Method and material for passivating the junctions of mesa type semiconductor devices. 3,859,127, Cl. 117-212.000.

Leliaert, Raymond M., to Wheelabrator-Frye, Inc. Mobile surface treating apparatus. 3,858,359, Cl. 51-9.000.

Le Masurier, Philip H. Sound absorbing panel. 3,858,676, Cl. 181-33.00G.

Lemoine, Arthur Leo: *See—*
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Lendt, Hans-Jurgen: *See—*
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Lenoble, Jean-Paul. Directing sail. 3,858,542, Cl. 114-103.000.

Lenz, Josef. Air vent head. 3,858,603, Cl. 137-433.000.

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Lessen, Martin. Surgical method and electrode therefor. 3,858,586, Cl. 128-303.100.

Lestaevel, Pierre J. Locking device for containers. 3,858,740, Cl. 215-216.000.

Lesuer, William M., to Lubrizol Corporation, The. Products produced by post-treating oil-soluble esters of mono- or polycarboxylic acids and polyhydric alcohols with epoxides. 3,859,318, Cl. 260-410.600.

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Lofquist, Robert Alden; Saunders, Peter Reginald; and Mayer, Richard Eugene, to Allied Chemical Corporation. Ethoxylated aliphatic tertiary amines to reduce ozone attack on dyes in polyamide fibers. 3,859,045, Cl. 8-165.000.
Logan, Ralph Andre; and Miller, Barry Irwin, to Bell Telephone Laboratories, Incorporated. MULTIPLE ANODIZATION SCHEME FOR PRODUCING GaAs LAYERS OF NONUNIFORM THICKNESS. 3,859,178, Cl. 204-15.000.
Lombard, Paul; and Mousset, Andre, to Produits Chimiques Ugine Kuhlmann. Palletization of nonrigid elementary loads. 3,858,526, Cl. 108-51.000.
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Lowell, Percival Davis, Jr. Apparatus for facilitating trailer hitch element alignment. 3,858,966, Cl. 350-307.000.
Lowery, Anna Elizabeth. Head ornament for wearing over the hair. 3,858,590, Cl. 132-46.00R.
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Boyer, John A.; Ludwig, David P.; and Zwickel, Friedrich, 3,858,721.
Luitwieler, Samuel H., to Beekman Instruments, Inc. Cosmic energy overload detector. 3,859,532, Cl. 250-369.000.
Luitwieler, Samuel H., Jr.; Klein, Paul R.; and Robinson, Dale Dario, to Beckman Instruments, Inc. Gamma ray apparatus with sample changer. 3,859,528, Cl. 250-328.000.
Lumedyne, Inc.: *See—*
Vogt, William J., 3,859,563.
Lund, Harold H.: *See—*
Schultz, Harry D.; and Lund, Harold H., 3,858,595.
Lundstrom, William. Invertible floating game board with ping-pong and pool table surfaces. 3,858,877, Cl. 273-5.00R.
Lunn, William H. W.: *See—*
Szinai, Stephen S.; and Lunn, William H. W., 3,859,352.
Lurwig, Fred W., Jr., to Allied Products Corporation. Tractor mounted utility grader blade. 3,858,663, Cl. 172-447.000.
Luterick, Hugh C. Oil removing tool and method. 3,858,686, Cl. 184-1.500.
Luthman, Paul A.; and Fischer, Thomas R., to Avco Corporation. Liquid manure tank spreading rotor. 3,858,809, Cl. 239-684.000.
Luton, James N., Jr.; Gauster, Wilhelm F.; and Brown, Robert L., to United States of America, Atomic Energy Commission. Torus windings having asymmetric magnet coils. 3,859,615, Cl. 336-225.000.
Lux, William. Fluttering aerial toy. 3,858,350, Cl. 46-78.000.
M. Walker Associates, Inc.: *See—*
Walker, Maurice J., 3,859,511.
Ma, Carlton Y. W., to Cincinnati Milacron, Inc. Method for injection molding machine automatic control. 3,859,400, Cl. 264-40.000.
Maas, Henrious Johannes, to Arenco-P.M.B. N.V. Method of felting two tobacco fillers in a cigar or cigar rod. 3,858,593, Cl. 131-81.00A.
MacFetrich, Robert H., to Jet Line Products, Inc. Fish tape. 3,858,848, Cl. 254-134.3FT.
Mack, John A. Dispensing apparatus for de-icing roadways and like surfaces. 3,858,763, Cl. 222-193.000.
MacKenzie, Burton Thornley, Jr., to General Electric Company. Pressureless cure system for chemically cross-linking ethylene containing polymers. 3,859,247, Cl. 260-42.150.
MacZura, George: *See—*
Francis, Thomas L.; and MacZura, George, 3,859,427.
Maddox, Bryant K.: *See—*
Blackstone, Michael; Maddox, Bryant K.; Rowland, Bobby A.; and Tate, Stanley L., 3,858,776.
Maddox, Jim, Jr.: *See—*
Flournoy, Kenoth H.; Maddox, Jim, Jr.; and Tate, Jack F., 3,858,656.
Mader, Helmut: *See—*
Morcher, Bernhard; and Mader, Helmut, 3,859,095.
Maeda, Kazuo, to Mitsui Shipbuilding and Engineering Co. Ltd. Apparatus for aligning welding joints. 3,858,865, Cl. 269-25.000.
Magruder, Michael Keith: *See—*
Bahl, James Melvin; Moon, Seaton; and Magruder, Michael Keith, 3,858,456.
Maher, John P.: *See—*
Burks, Darnall P.; Maher, John P.; Martin, Jacob H.; Frantz, Franklin D., Jr.; and Lemoine, Arthur Leo, 3,859,128.
Main, Duane C., to Burger Chef Systems Inc. Temperature responsive cooking timer. 3,859,644, Cl. 340-228.00R.
Mainard, Douglas Raymond: *See—*
Beasley, Robert Malcolm; Harman, David John; Mainard, Douglas Raymond; and Washington, Derek, 3,859,071.
Mainord, Kenneth R., to Eastman Kodak Company. Emulsifiable polyethylene compositions prepared from thermally degraded low molecular weight polyethylene and crotonic acid. 3,859,385, Cl. 260-878.00R.
Mainord, Kenneth R., to Eastman Kodak Company. Emulsifiable polyolefin compositions compositions prepared from thermally degraded low molecular weight polyolefin and crotonic acid. 3,859,386, Cl. 260-878.00R.

Maiste, Arved; and Seton, Walter F., to White Motor Corporation of Canada Limited. Corn header with automatic adjustment of stalk rolls. 3,858,384, Cl. 56-14.200.

Majima, Azusa: *See—*
Kimura, Takashi; Majima, Azusa; and Hamamoto, Hiroshi, 3,859,085.

Majumdar, Amalendu Jyoti, to National Research Development Corporation. Autoclaved materials. 3,859,106, Cl. 106-120.000.

Maki, Naoki, to Hitachi, Ltd. Linear motor for high speed railroads. 3,858,522, Cl. 104-148.0LM.

Makosch, Guenter: *See—*
Jaerisch, Walter; and Makosch, Guenter, 3,858,981.

Maksuyama Petrochemicals Inc.: *See—*
Shigeyasu, Motoo; and Kuihara, Kenzo, 3,859,344.

Malasek, Jaromir: *See—*
Dvoracek, Pavel; Malasek, Jaromir; Kuda, Vladimir; and Slezak, Adolf, 3,858,621.

Maltsev, Vadim Vasilievich: *See—*
Samoilov, Sergei Mikhailovich; Plate, Nikolai Alfredovich; Maltsev, Vadim Vasilievich; Monastyrsky, Viktor Nikolaevich; and Kargin, Valentin Alexeevich, deceased, 3,859,220.

Manco Mfg. Co.: *See—*
Valente, Raymond L., 3,858,471.

Mandon, Jean-Pierre: *See—*
Rabussier, Bernard; Mandon, Jean-Pierre; and Hennart, Claude, 3,858,807.

Manino, Louie G., to Lord Corporation. Vulcanization and direct bonding of diene elastomers. 3,859,258, Cl. 260-77.5CR.

Mankey, Harry S.: *See—*
Oswald, Norman Dean; and Mankey, Harry S., 3,858,730.

Mann, Maurice A.: *See—*
Nate, Michael A., II; and Mann, Maurice A., 3,858,245.

Mann, Milton, to Production Products, Inc. Cover plate. 3,859,454, Cl. 174-66.000.

Mann, Richard L. Leather belt manufacture. 3,858,244, Cl. 2-338.000.

Mannesmann-Kleiber GmbH: *See—*
Kleiber, Armin, 3,859,021.

Mannesmann-Meer Aktiengesellschaft: *See—*
Hiersig, Heinz M.; Hansgen, Klaus; and Sudhoff, Wolfgang, 3,858,411.

Manning, Harold E., to Petro-Tex Chemical Corporation. Chromium modified manganese ferrite oxidative dehydrogenation catalysts. 3,859,375, Cl. 260-680.00E.

Mannonen, Pentti, to Oy Stromberg AB. Fault detector for paper webs. 3,859,538, Cl. 250-572.000.

Manzke, Walter R. Removably positioned refrigerated chest for motor vehicles. 3,858,405, Cl. 62-196.000.

Mao, George W., to Gould Inc. Cadmium-antimony-lead alloy. 3,859,084, Cl. 75-166.00B.

Mar, Jerry, to Bell Telephone Laboratories, Incorporated. Random access memory array of hysteresis loop capacitors. 3,859,642, Cl. 340-173.0CA.

Marathon Oil Company: *See—*
Benham, Alvin L.; Drayer, Dennis E.; and McBride, Harold D., 3,859,343.
Haws, Gerald W.; Knight, Bruce L.; and Rhudy, John S., 3,858,657.
Rhudy, John S.; and Knight, Bruce L., 3,858,652.

Maravetz, Lester L., to Mobil Oil Corporation. Urea derivatives of furfuryl and pyranylmethyl compounds. 3,859,313, Cl. 260-347.300.

Marbach, Edward P.: *See—*
Ware, Arnold G.; and Marbach, Edward P., 3,859,049.

Marburg, Detlef: *See—*
Euteneuer, Fred; and Marburg, Detlef, 3,858,427.

Marco, Leslie Stephan, to Illinois Tool Works Inc. Container and lid construction for indicating lid removal. 3,858,748, Cl. 220-276.000.

Marconi Company Limited, The: *See—*
Curtis, Anthony Thomas, 3,859,601.

Marcyan, Stanley T. Universally adjustable cantilever bracket. 3,858,836, Cl. 248-278.000.

Marder, Arnold R.: *See—*
Giles, Philip M.; and Marder, Arnold R., 3,859,079.

Margraff, Rodolphe: *See—*
Bourat, Guy; and Margraff, Rodolphe, 3,859,253.

Marin, Glenn R., to Carborundum Company, The. Reinforced carbon bodies. 3,859,160, Cl. 161-42.000.

Mark Controls Corporation: *See—*
Carlson, Donald E., 3,858,599.

Maroschak, Ernest J. Apparatus for making corrugated plastic pipes with integral coupler collar. 3,859,025, Cl. 425-302.00B.

Martens, Martin A. J., to I. D. Engineering, Inc. Fastening clip. 3,858,280, Cl. 24-150.00R.

Martin, Albert E.: *See—*
Squillace, Anthony S.; Martin, Albert E.; and Rudmann, Jerald J., 3,859,222.

Martin, Jacob H.: *See—*
Burks, Darnall P.; Maher, John P.; Martin, Jacob H.; Frantz, Franklin D., Jr.; and Lemoine, Arthur Leo, 3,859,128.

Martin, Lee, to Nibco, Inc. Piping system. 3,858,911, Cl. 285-173.000.

Martin, Wesley G., to Aluminum Specialty Company. Coffee percolator with safety device. 3,858,494, Cl. 99-312.000.

Martin, Willi: *See—*
Cremer, Joseph; and Martin, Willi, 3,859,419.

Marumo, Nagayuki: *See—*
Matsui, Shunji; Hirashima, Kenzo; Hayakawa, Yoshikazu; and Marumo, Nagayuki, 3,859,482.

Maruya, Mitsuru: *See—*
Koide, Tohru; Hattori, Takahiro; Ohno, Yoshio; and Maruya, Mitsuru, 3,858,329.

Maruzen Oil Co. Ltd.: *See—*
Shigeyasu, Motoo; and Kuihara, Kenzo, 3,859,344.

Marvin Glass & Associates: *See—*
Glass, Marvin I.; and Terzian, Rouben, 3,858,353.

Marvin, Richard T., Jr.; and Rasmussen, Donald O., to Plastics Research Corporation. Container having improved resealable closure system. 3,858,752, Cl. 220-325.000.

Masarky, Allyn M.; and Masarky, Nathaniel H. Method and apparatus for lubricating conductors being pulled through conduits. 3,858,687, Cl. 184-15.00R.

Masarky, Nathaniel H.: *See—*
Masarky, Allyn M.; and Masarky, Nathaniel H., 3,858,687.

Maschinenfabrik Andritz Aktiengesellschaft: *See—*
Wieser, Rudolf, 3,859,008.

Maschinenfabrik Augsburg-Nurnberg Akiengesellschaft: *See—*
Winkler, Helmut; Seifert, Gunter; Moll, Hans; Oeckl, Otto; and Werner, Eberhard, 3,858,429.

Masino, Leo; and Guth, Horst, to E. Th. Noack Verpackungsmaschinen. Transfer conveyor assembly. 3,858,519, Cl. 104-88.000.

Massie, Philip E. Multi-position solenoid with latching or nonlatching capability. 3,859,547, Cl. 310-14.000.

Massie, Stephen N., to Universal Oil Products Company. Production of hydrogen. 3,859,428, Cl. 423-651.000.

Massoth, Franklin E.: *See—*
Brunn, Louis W.; Frayer, James A.; Massoth, Franklin E.; Paraskos, John A.; and Yanik, Stephen J., 3,859,200.

Masuda, Michio: *See—*
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Yanagimachi, Akio; Yamane, Hisakichi; Sawabe, Eiichi; Uehara, Takashi; and Yoshino, Takehiko, 3,859,458.

Masuyama, Kenya: *See—*
Muto, Kiyoshi; Yamamoto, Yasuhisa; Toyoda, Yoshinori; Azemi, Shozo; Okano, Shigeru; Masuyama, Kenya; Aihara, Seitaro; Ito, Takao; Ogawa, Isamu; and Harada, Mitsumasa, 3,858,318.

Mathues, Thomas P., to General Motors Corporation. Four-bar link variable ratio brake pedal mount. 3,858,457, Cl. 74-512.000.

Matsui, Katsuaki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Korumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 3,859,293.

Matsui, Shunji; Hirashima, Kenzo; Hayakawa, Yoshikazu; and Marumo, Nagayuki, to Nissan Motor Company Limited. Mechanical pressure detecting device. 3,859,482, Cl. 200-61.080.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kobayasi, Hiroyuki, 3,858,551.
Nishioka, Matsuo; and Oka, Shunzo, 3,859,618.
Oka, Shunzo; and Minami, Shunji, 3,859,617.
Okubo, Kei; Saito, Toshio; and Ueda, Kazunori, 3,859,062.
Yoshimura, Hisashi; and Atoji, Nobuhisa, 3,858,307.

Matsushita General Industrial Company Limited: *See—*
Tsuge, Yasuhiko; and Koizumi, Noboru, 3,858,680.

Mattel, Inc.: *See—*
Porter, Irwin C., 3,858,351.
Summerfield, William F.; Plizzotto, Joseph F.; and Bosley, Denis V., 3,858,872.

Matthews, Solomon Bertram, to Automatic Electronic Systems. Code module for subscriber terminals. 3,859,472, Cl. 179-18.0FH.

Matthey, Johnson & Co. Limited: *See—*
Fearns, Robert Henry; and Sanderson, Wallace George, 3,859,102.

Matys, Stanley J., to I Squared R Element Company, Inc. Heating element. 3,859,500, Cl. 219-553.000.

Matys, Stanley J., to I Squared R Element Company, Inc. Three-phase heating element. 3,859,501, Cl. 219-553.000.

Maurer, Hans W., to Westvaco Corporation. Oxidative degradation of polyvinyl alcohol. 3,859,269, Cl. 260-91.3VA.

Maxa, Jaroslav: *See—*
Uhlir, Pavel; and Maxa, Jaroslav, 3,858,417.

Maxcy, Frederic R.; and Glass, George A., to W-T Industries, Inc. Adjustable picket rail assembly for stairways. 3,858,850, Cl. 256-22.000.

May, Larry A., to Keene Corporation. Post-pay fuel dispensing systems. 3,858,758, Cl. 222-33.000.

Mayer, Richard Eugene: *See—*
Lofquist, Robert Alden; Saunders, Peter Reginald; and Mayer, Richard Eugene, 3,859,045.

Mazelsky, Bernard, to Ara, Inc. Rotary type energy absorber with axial drive and automatic resetting capability. 3,858,863, Cl. 267-139.000.

Mazzarella, Louis: *See—*
Ciampa, Fred A.; Serafini, Angelo; and Mazzarella, Louis, 3,858,862.

McAllister, Myron R.: *See—*
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McBride, Harold D.: *See—*
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McBurnie, Stuart G.; Jorgensen, William A. W.; and Rocher, Michel L. E., to Velto Industries Ltd. Convertible privacy-passage lock set. 3,858,918, Cl. 292-169.150.

McCabe, John M.: *See—*
Yoerger, William E.; McCabe, John M.; and Wright, John F., 3,859,090.

McClendon, William Duane. Model airplane construction. 3,858,349, Cl. 46-76.000.

McCloskey, Thomas H.: *See—*
Lewis, Ivor J.; and McCloskey, Thomas H., 3,858,844.

McComber, Donald R.: *See—*
Russ, Paul E., Sr.; McComber, Donald R.; and Patterson, Philip M., 3,858,949.

McCray, Loren G., Jr.: *See—*
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McCulloch Corporation, The: *See—*
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McDonnell Douglas Corporation,: *See—*
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McElroy, William: *See—*
Owren, Erling; and McElroy, William, 3,858,507.

McElwain, Jack W.; and Stephenson, Alvis D., Jr., to Texas Instruments Incorporated. Aerial drop penetration device. 3,859,598, Cl. 340-15.500.

McEwen, Frederick R.: *See—*
Evans, John H.; and McEwen, Frederick R., 3,858,392.

McFadden, Allan L.: *See—*
Dietz, Raymond L.; and McFadden, Allan L., 3,859,126.

McGee, Sherwood W.; and Mikoda, James H., to AMSTED Industries Incorporated. Powder metallurgy composite. 3,859,016, Cl. 425-78.000.

McGlasson, Donald S.; Tidwell, James T.; Weaver, Charles E.; and Culpepper, Charles A., to United States of America, Atomic Energy Commission. Passivation of brazed joints to fluorinating atmospheres. 3,859,145, Cl. 148-20.300.

McGrow, George: *See—*
Smalley, Graham; McGrow, George; and Crowley, Dennis, 3,859,212.

McGuire, Winston B., to W. B. McGuire Co., Inc. Bumper mounting for flexible traffic door. 3,858,357, Cl. 49-460.000.

McKnight, Eugene Audrey; and Kishbaugh, Clyde Davis, to Stamford Chemical Industries, Inc. Drycleaning detergent composition. 3,859,225, Cl. 252-153.000.

McLain, Charles D., to Olin Corporation. Apparatus for making heat exchanger tube. 3,858,785, Cl. 228-17.000.

McLaren, James C.; and Reber, Bruce E., to Tenneco Inc. Pleated air filter. 3,859,068, Cl. 55-498.000.

McLelland, Howard B.: *See—*
Jarzynski, Jacek; McLelland, Howard B.; and Kessler, Hyman, 3,858,437.

McLeod, John W., to Lone Star Container Corporation. Rectangular-shaped board of flat corrugated material with an improved edge structure. 3,859,161, Cl. 161-44.000.

McMurtry, Carl H.: *See—*
Bailey, Wallace O.; McMurtry, Carl H.; and Miccioli, Bruno R., 3,859,399.

McNair, Samuel L., to Dazey Products Company. Hair curling instrument with interchangeable heating elements. 3,859,497, Cl. 219-225.000.

McNeely, Gerald Willard, to Akzona Incorporated. Process for manufacture of flame retardant polyester. 3,859,249, Cl. 260-45.9NP.

Measuregraph Company, The: *See—*
Thater, Walter A., 3,858,475.

Mechtronics Corporation: *See—*
Langdon, Richard H., Jr., 3,858,757.

Meckler, Helmut H., to Wernicke & Co. K.G. Apparatus for centering spectacle lenses, and for attaching a mount to the spectacle lens. 3,858,982, Cl. 356-127.000.

Media Systems Corporation: *See—*
Flagler, Philip B., 3,858,720.

Meibuhr, Stuart G., to General Motors Corporation. Stabilization of nickel boride catalyst in potassium hydroxide electrolytes. 3,859,181, Cl. 204-16.000.

Meier, Udo H., to Reliance Electric Company. Multiple control wave form circuit. 3,859,585, Cl. 321-9.00A.

Meiji Seika Kaisha Ltd.: *See—*
Sekizawa, Yasuharu; Seki, Shigeo; Nomiya, Bunzo; Koeda, Takemi; Kai, Fumio; Akai, Naotoshi; Yusa, Yasushi; and Fukuyasu, Fuguaki, 3,859,362.

Meindl, Hubert: *See—*
Hindermann, Peter; and Meindl, Hubert, 3,859,283.

Melanson, Walter E. Picture holder. 3,858,340, Cl. 40-68.000.

Melin, Hans: *See—*
Schade, Gerhart; and Melin, Hans, 3,859,257.

Melin, John A.: *See—*
Horn, John Gerhard; and Melin, John A., 3,858,347.

Melz, Bernhard, to Heberlein & Co. AG. Thread windup apparatus and process. 3,858,818, Cl. 242-43.000.

Mendelson, Ralph A.; Staudhammer, Karl P.; and Valencia, Roberto, Jr., to United States of America, Interior. Corrosion resistant alloys. 3,859,080, Cl. 75-126.00C.

Mendoza, Fausto Celorio. Method for obtaining nixtamalized flours. 3,859,452, Cl. 426-375.000.

Mentrup, Anton: *See—*
Renth, Ernst Otto; Mentrup, Anton; Schromm, Kurt; and Giesemann, Rolf, 3,859,438.

Merck & Co., Inc.: *See—*
Cheng, Theresa Y.; Karady, Sandor; Pines, Seemon H.; and Sletzinger, Meyer, 3,859,282.
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Merkenich, Karl: *See—*
Kandler, Joachim; Merkenich, Karl; Henning, Klaus; Vogt, Wilhelm; Auer, Eberhard; and Glaser, Hermann, 3,859,224.

Merritt, William C. Construction bracket. 3,858,837, Cl. 248-300.000.

Merten, Rudolf: *See—*
Hocker, Jurgen; and Merten, Rudolf, 3,859,299.

Meshberg, Philip. Actuator assembly for an encased dispenser and method. 3,858,762, Cl. 222-180.000.

Messinger, Mark P.: *See—*
Jannery, George E.; and Messinger, Mark P., 3,859,596.

Messner, Jakob. Multi-roll calender for plastic material. 3,859,027, Cl. 425-363.000.

Metcalf, John C., Jr.; and Silbermann, Klaus. Modular boat system. 3,858,541, Cl. 114-43.500.

Metro, Robert D.: *See—*
Kuhns, Robert C.; and Metro, Robert D., 3,858,264.

Metrologic Instruments, Inc.: *See—*
Fendley, James R.; and Knowles, Carl Harry, 3,859,072.

Meudec, Henri, to Rol. Extrusion of sheath onto elongated support using decompression zones. 3,859,017, Cl. 425-113.000.

Meyer, Donald R.; and Sill, Arthur D., to Richardson-Merrell Inc. 6H-DIBENZO[b,d]PYRAN-6-ONES. 3,859,312, Cl. 260-343.20R.

MIAG Muehlenbau und Industrie GmbH: *See—*
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Miccioli, Bruno R.: *See—*
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Midland-Ross Corporation: *See—*
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Midwest Microwave, Inc.: *See—*
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Mikoda, James H.: *See—*
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Miles, John L., to Baird-Atomic, Inc. Process involving optical thin film filters protected against deterioration from humidity. 3,859,131, Cl. 117-33.300.

Miller, Albert R.; and Spiegel, Jacob, to Gilbreth Company. Soluble coated paper. 3,859,125, Cl. 117-155.0UA.

Miller, Barry Irwin: *See—*
Logan, Ralph Andre; and Miller, Barry Irwin, 3,859,178.

Miller, Clark Ober, to Lubrizol Corporation, The. Nitrogen- and phosphorus-containing compositions. 3,859,300, Cl. 260-309.600.

Miller, Douglas P., to Applied Power Inc. H-frame hydraulic press. 3,858,431, Cl. 72-448.000.

Miller, Gary L.: *See—*
Wilson, M. Van; and Miller, Gary L., 3,858,415.

Miller, Ray J.; and Trabbic, Gerald W., to Comfort, Inc. Method of producing particulate material. 3,858,806, Cl. 239-8.000.

Miller, Stephen H.; Sutliff, Robert C.; Tucker, Archie J.; White, Neil S.; and Elle, Bruce L., to Eastman Kodak Company. Film cartridge. 3,858,968, Cl. 352-78.00R.

Milne, George A. Sewage treatment system. 3,859,215, Cl. 210-170.000.

Milo, Simcha. Prosthetic cardiac valves. 3,858,246, Cl. 3-1.000.

Milo, Simcha, to Pravel, Wilson & Matthews, a part interest. Surgical retaining device. 3,858,578, Cl. 128-20.000.

Milovancevic, Slavko. Sequencing timers. 3,859,543, Cl. 307-293.000.

Milton Roy Company: *See—*
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Minnesota Mining and Manufacturing Company: *See—*
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Chambers, William L., 3,859,089.
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Minster Machine Company, The: *See—*
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Misato, Tomomasa; Suzuki, Toshiyuki; Nakagawa, Taizo; Ohmori, Kaoru; Baba, Takeo; Ishida, Shuichi; and Ishii, Junichi, to Nippon Kayaku Kabushiki Kaisha. Methods of killing bacteria using alkylthiosemicarbazides. 3,859,444, Cl. 424-323.000.

Mischenko, Nicholas: *See—*
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Mischon, Lester, to Singer Company, The. Circular knitting machine with pattern wheels. 3,858,414, Cl. 66-50.00A.

Mita, Katsuji: *See—*
Kajiwara, Toshiyuki; Fukui, Kakichi; Mita, Katsuji; and Yamauchi, Akira. 3,858,424.

Mitsubishi Chemical Industries Ltd.: *See—*
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Mitsubishi Kinzoku Kogyo Kabushiki Kaisha: *See—*
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Mitsubishi Paper Mills, Ltd.: *See—*
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Mitsui Shipbuilding and Engineering Co. Ltd.: *See—*
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Miura, Eiichi: *See—*
Kadono, Yahiko; Nakazato, Teruo; Miura, Eiichi; and Kitamura, Thunekathu. 3,858,999.

Miyake, Masaya: *See—*
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Miyashita, Kanji: *See—*
Fujimori, Yoshiaki; and Miyashita, Kanji. 3,858,388.

Mizerak, Dennis S.; and Stohrer, Charles E., Jr., to Harper-Wyman Company. Gas burner. 3,858,811, Cl. 239-553.300.

Mizuno, Katsumi: *See—*
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Mizuno, Kiyohiko: *See—*
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Moe, James M., to Fluor Corporation. Synthesis gas generation with carbon dioxide supplemented feed. 3,859,230, Cl. 252-373.000.

Mohr, Walter, to Braun Aktiengesellschaft. Lighter. 3,859,037, Cl. 431-344.000.

Mohri, Katsuo: *See—*
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Yanagimachi, Akio; Yamane, Hisakichi; Sawabe, Eiichi; Uehara, Takashi; and Yoshino, Takehiko. 3,859,458.

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Monastyrsky, Viktor Nikolaevich: *See—*
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Monia, Victor, to Guardian Packaging Corporation. Method of forming tubular walls for product containers. 3,859,154, Cl. 156-184.000.

Monocab, Inc.: *See—*
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Monsanto Company: *See—*
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Moon, Malcolm W., to Upjohn Company, The. Anti-arthropodal cyclic dithioketals of glyoxyloyl halide 1-phenylhydrazones. 3,859,441, Cl. 424-277.000.

Moon, Seaton: *See—*
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Moore, Alvin Edward. Insulated, tubular-wall construction and method. 3,858,376, Cl. 52-382.000.

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Moore, William Cabell; and Hendricks, Frank L., Jr. Cable trough. 3,858,614, Cl. 138-105.000.

Moorman, William Albert: *See—*
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Morcher, Bernhard; and Mader, Helmut, to Agfa-Gevaert Aktiengesellschaft. Color-photographic material with improved color reproduction. 3,859,095, Cl. 96-74.000.

Morgan Adhesives Company: *See—*
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Morgan, Burton D., to Morgan Adhesives Company. Method of making a scored paper laminate. 3,859,157, Cl. 156-268.000.

Morgan Fairest Limited: *See—*
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Morgan, Harvey E., to Brad Ragan, Inc. Clamshell pressure vessel. 3,859,054, Cl. 23-290.000.

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Morioka, Akira; and Iwasaki, Hiroshi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Device for loading bulk materials. 3,858,733, Cl. 214-17.0CA.

Morishita, Masataka; Inaba, Yoshihito; Kobari, Sadami; Fukushima, Mitsuru; and Abe, Jinnosuke, to Toyo Jozo Co., Ltd.; and Fuji Photo Film Co., Ltd. Method of microcapsule preparation. 3,859,228, Cl. 252-316.000.

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Morrell, Ronald Joseph; Laing, Graham Sterling; and Gumb, Bev William, to Northern Electric Company Limited. Two position mounting for telephone sets. 3,859,476, Cl. 179-100.00C.

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Motorola, Inc.: *See—*
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Mousset, Andre: *See—*
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Moyer, Richard L., to Hercules Incorporated. Flexible plate saddle lock-up system. 3,858,511, Cl. 101-415.100.

Mrkva, Frantisek: *See—*
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Mrowca, Joseph J., to du Pont de Nemours, E. I., and Company. Carboalkoxylation of unsaturated compounds with a palladium catalyst containing bridging phosphido groups. 3,859,319, Cl. 260-410.600.

Mrozek, John W.; and Albers, Bernd, to Pennsylvania Engineering Corporation. Weigh system for transfer car. 3,858,672, Cl. 177-136.000.

Mrozik, Helmut H., to Merck & Co., Inc. Composition and methods of treatment employing acrylanilides as anticoccidial agents. 3,859,443, Cl. 424-324.000.

Mukai, Noboru; and Kawai, Masanobu, to Kyowa Hakko Kogyo Kabushiki Kaisha. Flavor enhancement of milk foodstuffs. 3,858,492, Cl. 426-36.000.

Multifastener Corporation: *See—*
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Murata, Keisuke, to Ricoh Co., Ltd. Device for clamping the trailing end portion of a sheet to a drum. 3,858,513, Cl. 101-415.100.

Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Korumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, to Sankyo Company Limited. N-substituted spiro piperidine derivatives. 3,859,293, Cl. 260-293.580.

Murgulescu, I. G.; Oncescu, Tatiana; and Vlagiu, I., to Central De Chimie Fizica. Polymerization of acrylonitrile using radiation in the presence of dimethylsulphoxide and a protein. 3,859,189, Cl. 204-159.120.

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Murray, Ralph P. Foldable garment hanger. 3,858,770, Cl. 223-94.000.

Musslewhite, L. J. Pipe thread protector. 3,858,613, Cl. 138-96.00T.

Muto, Kiyoshi; Yamamoto, Yasuhisa; Toyoda, Yoshinori; Azemi, Shozo; Okano, Shigeru; Masuyama, Kenya; Aihara, Seitaro; Ito, Takao; Ogawa, Isamu; and Harada, Mitsumasa, to Kajima Kensitsa Kabushiki Kaisha. Process and apparatus for positioning an assembly of intersecting beam reinforcing structural bars with respect to previously positioned column reinforcing structural bars. 3,858,318, Cl. 29-433.000.

Myers, David M.; and Jones, Charles, to Curtiss-Wright Corporation. Two-stage rotary engine of trochoidal type. 3,858,557, Cl. 123-8.050.

Myers, Lawrence Archibald, Jr., to Conair, Inc. Hopper assembly. 3,858,772, Cl. 222-460.000.

Nabeyama, Hiroaki: *See—*
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Yanagimachi, Akio; Yamane, Hisakichi; Sawabe, Eiichi; Uehara, Takashi; and Yoshino, Takehiko, 3,859,458.

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Nahon, Abraham S. Device to prevent opening of a door or the like. 3,858,917, Cl. 292-57.000.

Nakagawa, Taizo: *See—*
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Nakamoto, Yuzuru; Kubota, Eishi; Sakamoto, Kazuhiko; Okuda, Koji; Imamura, Takaaki; Sano, Shigeshia; and Suzuki, Fukushi, to Bridgestone Tire Co., Ltd. Composite of a metallic material and vulcanized rubber and process for production thereof. 3,858,635, Cl. 152-330.000.

Nakamura, Shizuo: *See—*
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Nakamura, Yosio, to General Dynamics Corporation. Method and apparatus for acoustic emission non- destructive testing. 3,858,439, Cl. 73-71.400.

Nakamura, Zenzo, to Canon Kabushiki Kaisha. Flash device. 3,859,562, Cl. 315-241.00P.

Nakanishi, Michio; Shiroki, Masami; Tahara, Tetsuya; and Araki, Kazuhiko, to Yoshitomi Pharmaceutical Industries, Ltd. Thienodiazepine compounds. 3,859,275, Cl. 260-239.30B.

Nakase, Takamichi: *See—*
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Narsavage, Stephen T.; Vine, Raymond W.; and Emanuelson, Roger C., to United Aircraft Corporation. Novel composite fuel cell electrode. 3,859,138, Cl. 136-120.0FC.

Nate, Michael A., II; and Mann, Maurice A., to Hair Again Ltd. Method of applying hair with individual sutures. 3,858,245, Cl. 3-1.000.

Natelson, Samuel, to Rohe Scientific Corporation. Means for transferring a liquid in a capillary open at both ends to an analyzing system. 3,859,051, Cl. 23-259.000.

National Can Corporation: *See—*
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Naylor, Harry E. Heat exchanger. 3,858,646, Cl. 165-145.000.

NCR Corporation: *See—*
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Neal, James; and Duvall, Elbert. Universal culinary tool with protective screen shield. 3,858,320, Cl. 30-323.000.

Near, Charles W.: *See—*
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Nearhoof, Harold J., to Carborundum Company, The. Baseline compensator for differential thermal analyzer. 3,858,433, Cl. 73-15.00B.

NECCHI Society per Azioni: *See—*
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Neiuweboer, Gerrit: *See—*
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Nelligan, William B., to Schlumberger Technology Corporation. Method and apparatus for automatic correction of measured thermal neutron decay time. 3,859,524, Cl. 250-262.000.

Nelson, James F.: *See—*
Keidl, Steven D.; and Nelson, James F., 3,859,572.

Nelson, Robert E. Cyclic pressure switch with plural diaphrams. 3,859,484, Cl. 200-83.00Y.

Nelson, Roger P.: *See—*
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Nemeth, Henry; and Snyder, Edward, III, to Ideal Toy Corporation. Gap jumping toy vehicle game. 3,858,875, Cl. 273-1.00R.

Nemtsov, Jury Mitrofanovich; Klimov, Alexandr Galikovich; and Grishin, Ivan Ignatievich. Universal joint. 3,858,413, Cl. 64-17.00A.

Nero, Leroy W., to Warwick Electronics Inc. Active circuit for delaying transient signals in a television receiver. 3,859,544, Cl. 307-293.000.

Neumann, Leopold, to Panametrics, Inc. Ultrasonic-gaging system method and apparatus. 3,858,438, Cl. 73-67.900.

Newstead, Charles; and Wright, Andrew Charles Walden, to Girling Limited. Vehicle brake actuators. 3,858,488, Cl. 92-61.000.

Newton, John Michael; and Rowley, Geoffrey, to Lilly Industries Limited. Drug formulations. 3,859,431, Cl. 424-37.000.

Nguyen-Tat, Thang; Pain, Roger Andre; and Herluison, Jean-Claude, to International Standard Electric Corporation. System for analyzing and storing telegraph characters received on several lines. 3,859,456, Cl. 178-3.000.

Nibco, Inc.: *See—*
Martin, Lee, 3,858,911.

Nicklin, Thomas; and Clough, Peter Spence, to North Western Gas Board. Hydrogen cyanide removal. 3,859,415, Cl. 423-236.000.

Nicolet Instrument Corporation: *See—*
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Niessen, Paul: *See—*
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Niioka, Takeharu: *See—*
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Nilsen, Arthur A.: *See—*
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Nilson, Carl-Goran; and Olsson, Sven Olov, to Alfa-Lavel AB. Sludge centrifuge. 3,858,794, Cl. 233-7.000.

Ninerailles, Jacques; and Raye, Auguste, to Thomson-CSF. High-power electronic tube, in particular a microwave tube with improved cooling. 3,859,551, Cl. 313-34.000.

Nippon Chemical Industries Co., Ltd.: *See—*
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Nippon Electric Company Limited: *See—*
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Hoso Kyokai: *See—*
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Nippon Kayaku Kabushiki Kaisha: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Kokuyu Tetsudo: *See—*
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Nippon Soken, Inc.: *See—*
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Nishioka, Matsuo; and Oka, Shunzo, to Matsushita Electric Industrial Co., Ltd. Device for simultaneously controlling a set of variable resistors. 3,859,618, Cl. 338-128.000.
Nishiuchi, Hiroshi: *See—*
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Nomiya, Bunzo: *See—*
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North American Rockwell Corporation: *See—*
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North American Systems Corporation: *See—*
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Novack, Joseph; and Bir, Wallace G., to Monsanto Company. Continuous mass polymerization of poly alkenyl aromatic polymers. 3,859,268, Cl. 260-88.200.
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Nowak, Karl. Method and device for obtaining controlled nuclear fusion by means of artificial plasma. 3,859,164, Cl. 176-2.000.
Nozaki, Wataru, to Hitachi, Ltd. Break down tester. 3,858,442, Cl. 73-94.000.
Numata, Mitsuo: *See—*
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Nyman, Alexander. Elevated transport system. 3,858,518, Cl. 104-88.000.
Obergfell, Allen R.; and Geist, Bernard W., to Fastener Corporation. Safety mechanism for fastener driving tool. 3,858,781, Cl. 227-8.000.
O'Brien, John A., Jr. Shaping detector for tire mold. 3,859,015, Cl. 425-29.000.
Occidental Energy Development Company: *See—*
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O'Connor, James M.; Smith, Richard R.; and Lal, Joginder, to Goodyear Tire & Rubber Company, The. Preparation of unsaturated copolymers. 3,859,263, Cl. 260-80.780.
O'Dell, James R. Pressure spraying apparatus. 3,858,761, Cl. 222-178.000.
O'Donnell, Leopold Henry, to Canada, Her Majesty the Queen in Right of, as represented by the Secretary of State. Method and apparatus for providing indexing codes on movie film and associated magnetic tape. 3,858,967, Cl. 352-38.000.
O'Driscoll, Kenneth F.; and Izu, Masatsugu, to Polymeric Enzymes, Inc. Enzymes entrapped in gels. 3,859,169, Cl. 195-63.000.
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Oetiker, Hans. Rotatable bayonnet-type coupling. 3,858,910, Cl. 285-84.000.
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Ogino, Shigeo; Fujimoto, Shigehisa; Wada, Hiroo; and Tanigawa, Yukio, to Sumitomo Chemical Company, Ltd. Microbial production of biotin. 3,859,167, Cl. 195-51.00R.
Ogle, Hugh Malcolm, to Prototron Associates. Apparatus for providing a statistical count of particulate material in a fluid. 3,858,851, Cl. 356-102.000.
Ogle, Robert W., to IMS Limited. Intravenous container mixing assembly. 3,858,580, Cl. 128-214.00C.
Ogle, Robert Walter, to IMS Limited. Cartridge vaccine injector. 3,858,582, Cl. 128-220.000.
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Oswald, Norman Dean; and Mankey, Harry S., to Standard Manufacturing Company, Incorporated. Four-wheel drive lift truck. 3,858,730, Cl. 214-1.00D.

Othmer, Donald F. Manufacture of titanium chloride, synthetic rutile and metallic iron from titaniferous materials containing iron. 3,859,077, Cl. 75-1.000.

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Ott, Eugene Gray; and Conn, William Michael. Insert cutter for cutting kerfs. 3,858,670, Cl. 175-374.000.

Ottenhues, Ludger. Vacuum lifting device. 3,858,926, Cl. 294-64.00R.

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Page, Robert E. Pulse rate and amplitude monitor. 3,858,574, Cl. 128-205.00T.

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Parikh, Gokaldas C.; and Duvall, Charles Steven, to United States of America, Navy. Radioactive iodine labeling of viruses, enzymes and flourescene isothyiocyanate. 3,859,430, Cl. 424-1.000.

Parish, Walter Wesley; and Broadbent, H. Smith. Thiopteridines and process for producing same. 3,859,287, Cl. 260-251.500.

Park, Im Keum, to Celanese Corporation. Production of pervious low density carbon fiber reinforced composite articles. 3,859,158, Cl. 156-331.000.

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Pasbrig, Max, to Lacrex Brevetti S.A. Clamping tool. 3,858,468, Cl. 81-185.000.

Pasch, Lambert, to Uniroyal A.G. Transfer molding apparatus. 3,859,023, Cl. 425-251.000.

Pasch, Lambert; and Wagemann, Heinz, to Uniroyal A.G. Transfer molding apparatus. 3,859,024, Cl. 425-251.000.

Pask, Leonard J. Chair. 3,858,935, Cl. 297-353.000.

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Peebles, Delbert W. Demountable safety ladder with hand rail. 3,858,905, Cl. 280-163.000.

Peerman, Dwight E., to General Mills Chemicals, Inc. Fabric bonding improvement. 3,859,234, Cl. 260-18.00N.

Peil, William, to General Electric Company. Signal acquisition network for signal reception. 3,859,599, Cl. 325-419.000.

Peirce, Benjamin F., Jr. Pull line feeder. 3,858,849, Cl. 254-134.30R.

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Perpetuum-Ebner, Fabrik fur Feinmechanik Und Elektrotechnik Steidinger & Co. kom. ges., Firma: *See—*
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Perry, Donald R. Housing and attaching means for engine hand-starting auxiliary device. 3,858,566, Cl. 123-185.00A.
Perry, Philip George; and Purcell, Thomas Hector, to ESB Incorporated. Seawater battery with valve. 3,859,136, Cl. 136-100.00M.
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Pomeroy, Raymond Visher, to Omark Industries, Inc. Pneumatic fastener driving tool. 3,858,782, Cl. 227-8.000.

Pommerening, Uwe A: *See—*
Gueldenpfennig, Klaus; Pommerening, Uwe A; and Russell, Stanley L., 3,859,474.

Poole, John Huyton; and Goodison, Brian Anthony. Detection of breaks in flexible elongate members. 3,859,593, Cl. 324-32.000.

Pope, Isaac. Button sewing attachment. 3,858,536, Cl. 112-114.000.

Popplewell, James M.: *See—*
Anthony, William H.; and Popplewell, James M., 3,859,059.

Porter, Fred C.; and Nagy, Laszlo, to General Motors Corporation. Four speed manual transmission and control. 3,858,460, Cl. 74-753.000.

Porter, Harold F.; and Taub, Steven I., to du Pont de Nemours, E. I., and Company. Entrainment separator. 3,859,063, Cl. 55-233.000.

Porter, Irwin C., to Mattel, Inc. Figure toy injury-simulating apparatus and method. 3,858,351, Cl. 46-116.000.

Posselt, Klaus; and Thiele, Kurt, to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler. Indole aminoketones. 3,859,305, Cl. 260-326.150.

Poulo, Louis: *See—*
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Prachar, Otakar P., to General Motors Corporation. Acceleration-responsive sensor with readiness indicator circuit. 3,859,650, Cl. 340-262.000.

Pramenko, George M. Method and apparatus for draining liquid carrying ducts which transport liquid to and from liquid holding containers. 3,858,597, Cl. 137-1.000.

Pravel, Wilson & Matthews: *See—*
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Precision Metalsmiths, Inc.: *See—*
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Preformed Line Products Company: *See—*
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Preisler, Frank: *See—*
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Prelletz, Edward R.: *See—*
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Prentice, Paul R.: *See—*
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Preziosi, Luigi M.; and Fallon, Bernard R., to Westinghouse Electric Corporation. Electric lamp with integral plastic base member. 3,859,554, Cl. 313-315.000.

Principe, Pacifico A.: *See—*
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Proctor Chemical Company, Inc.: *See—*
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Sallin, Pierre, 3,858,624.

Productronix, Inc.: *See—*
Budraitis, Tadas, 3,858,440.

Produits Chimiques Ugine Kuhlmann: *See—*
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Proskow, Stephen, to du Pont de Nemours, E. I., and Company. Ultraviolet absorbing coating compositions. 3,859,330, Cl. 260-47.0UA.

Protect-O-Dome, Inc.: *See—*
Reed, David S.; and Cottrill, John E., 3,858,643.

Prototron Associates: *See—*
Ogle, Hugh Malcolm, 3,858,851.

Proudian, Andrew P.; Azzarelli, Teodoro; and Welkowsky, Murray Samuel, to Xonics, Inc. Ionography imaging chamber. 3,859,529, Cl. 250-315.000.

Proulx, Leo R. Protective temporary wall and roof structure. 3,858,364, Cl. 52-127.000.

Prow, Harold J., Jr.: *See—*
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Purves, George T., Jr. Convertible sofa-bed improvement. 3,858,255, Cl. 5-45.000.

Puzynya, Leonid Vasilievich: *See—*
Smirnov, Mikhail Dmitrievich; Sergeev, Ivan Demyanovich; Brod, Ilya Iosifovich; Kharman, Mikhail Nikolaevich; Puzynya, Leonid Vasilievich; Veinberg, Ikhil Abramovich; Zakharova, Ekaterina Georgievna; Lapshin, Vladimir Pavlovich; Kitaeva, Valentina Vasilievna; Petrov, Leonid Alexandrovich; Kukushkin, Vladimir Maximovich; Stukalov, Vladimir Nikolaevich; Smirnov, Pavel Mikhailovich; Novokreschenov, Viktor Timofeevich; Shushkevich, Eduard Nikolaevich; Atkarsky, Anatoly Alexandrovich; Okun, Boris Davydovich; Karasik, Vladimir Zakharovich; and Khodosova, Vera Nikolaevna, 3,858,263.

Quantor Corporation: *See—*
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Quantz, Norman G., to Lectron Products, Inc. Starter interlock circuit for a seat belt utilization detector. 3,859,627, Cl. 340-52.00E.

Queiroz, Hugo Soares, to Industria e Comercio de Implementos Agricolas e Desmantamento de Carrado Iciadec LTDA,. Stubbing or weeding devices. 3,858,338, Cl. 37-2.00P.

Quenot, Michel, to Stanley-Mabo. Handle for winding a tape measure. 3,858,823, Cl. 242-84.800.

Questor Corporation: *See—*
Burton, John C.; and Hayton, Eugene P., 3,858,274.

Quinn, Matthew H. Ski pole and snow basket therefor. 3,858,900, Cl. 280-11.37N.

R. J. Reynolds Tobacco Company: *See—*
Phillips, Floyd L., Jr., 3,858,788.

Rabinow, Jacob, to United States of America, Army. Thermal arming system. 3,858,516, Cl. 102-70.20R.

Rabow, Gerald, to International Telephone and Telegraph Corporation. Conical scan tracking system. 3,859,658, Cl. 343-7.400.

Rabussier, Bernard; Mandon, Jean-Pierre; and Hennart, Claude, to Ciba-Geigy AG. Apparatus for emitting vapors of volatile insecticidal agents or of similar volatile products. 3,858,807, Cl. 239-56.000.

Rachocki, Eugene, to Zurn Industries, Inc. Boarding ladder. 3,858,683, Cl. 182-156.000.

Radcliffe, Arthur J., Jr., to Burroughs Corporation. Method and apparatus for signal spectrum analysis by hadamard transform. 3,859,515, Cl. 235-164.000.

Radev, Hristo Kirilov; and Chobanova, Emilia Anguelova, to Nauchnoizsledovatelski Sektor pri WMEI "Lenin". Self-centering sighting mark. 3,858,327, Cl. 33-286.000.

Radkowsky, Alvin; Conley, George Henry; Ryals, Henry Wesley; Hanson, John Nils; Cohen, Joseph David; and Weinreich, William Arthur, III, to United States of America, Atomic Energy Commission. Epithermal to intermediate spectrum pressurized heavy water breeder reactor. 3,859,165, Cl. 176-18.000.

Radscheit, Kurt: *See—*
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Rampy, Gordon A.: *See—*
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Randall, George W., to Armco Steel Corporation. Pipe quench head. 3,858,860, Cl. 266-6.00S.

Randell, Forrest Thomson, to Weir Pumps Limited. Machine installation control system. 3,859,006, Cl. 415-17.000.

Ranieri, Louis F.: *See—*
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Rankin, John Charles. Isolated amplifier. 3,859,604, Cl. 330-10.000.

Ranno, Carl P.: *See—*
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Rao, Suryanarayana Krishnappa: *See—*
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Rasmussen, Donald O.: *See—*
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Rasmussen, Holger, to Georgia-Pacific Corporation. Towel dispenser. 3,858,951, Cl. 312-38.000.

Rasmussen, Peter. Method and apparatus for demonstrating polynomial algebraic operations. 3,858,332, Cl. 35-30.000.

Rasmussen, Thomas S.: *See—*
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Ratcliffe, Charles T.: *See—*
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Raths, Fred W.: *See—*
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Rausch, Paul Gilger; and Todish, Walter Donald. Container with mixer and method of use. 3,858,853, Cl. 259-40.000.

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RCA Corporation: *See—*
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Sommer, Alfred Hermann, 3,858,955.

Reba, Imants; and Wolthausen, Edward C., to Crown Zellerback Corporation. Apparatus and method for transporting fluid-entrainable particles. 3,859,205, Cl. 209-3.000.

Reber, Bruce E.: *See—*
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Redmore, Derek, to Petrolite Corporation. Water clarification with nitrogen-heterocyclic phosphonic acids. 3,859,211, Cl. 210-54.000.

Reed, David S.; and Cottrill, John E., to Protect-O-Dome, Inc. Personnel shelter. 3,858,643, Cl. 165-47.000.

Reed, Ray Allen, to Bell Telephone Laboratories, Incorporated. Pulse-width modulation converter circuit providing asymmetry correction and current monitoring. 3,859,583, Cl. 321-2.000.

Regan Offshore International, Inc.: *See—*
Watkins, Bruce J., 3,858,401.
Regelson, William, to Hercules Incorporated. Antiviral treatment. 3,859,433, Cl. 424-85.000.
Regipa, Robert, to Centee National d'Etudes Spatiales. Device for locating the edges of a flexible film. 3,858,778, Cl. 226-180.000.
Reich, Charles: *See—*
Johnson, James William; Peterson, John E.; and Reich, Charles, 3,859,162.
Reid, Jay H., to Sears, Roebuck and Co. Grader blade attachment for tractor. 3,858,662, Cl. 172-297.000.
Reinhardt, Robert M.; and Kullman, Russell M. H., to United States of America, Agriculture. Removal of free formaldehyde from solutions of methylolated carbamate finishing agents. 3,859,334, Cl. 260-482.00C.
Reis, Anton, to Lienhard AG. Support base for a storage receptacle. 3,858,527, Cl. 108-55.000.
Reitano, Carmen T., to Burroughs Corporation. Color coded digit identifying value ribbon for document fraud prevention. 3,858,705, Cl. 197-172.000.
Reithmaier, Egon, to Siemens Aktiengesellschaft. Electrical coil assembly. 3,859,614, Cl. 336-83.000.
Reliable Electric Company: *See—*
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Reliance Electric Company: *See—*
Meier, Udo H., 3,859,585.
Renfrew, Edgar Earl; and Genta, Guido Ruggiero Lorenzo, to American Aniline Products, Inc. Yellow methine dyes for hydrophobic textile material. 3,858,259, Cl. 8-179.000.
Renner, Alfred: *See—*
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Renth, Ernst Otto; Mentrup, Anton; Schromm, Kurt; and Giesemann, Rolf, to Boehringer Ingelheim G.m.b.H. Pharmaceutical compositions containing an n-(1-bicyclic aryl-propyl-2)-n-bicyclic arylpiperazine and method of use. 3,859,438, Cl. 424-250.000.
Rentz, Robert I. Creative toy for producing objects having patterns of variable coloration and/or design. 3,859,020, Cl. 425-130.000.
Research Development Systems, Inc.: *See—*
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Reynolds Metal Company: *See—*
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Rhodes, Joseph S.: *See—*
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Rhodes, Philip H.: *See—*
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Rhudy, John S.: *See—*
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Richards, Kenneth J.: *See—*
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Richardson-Merrell Inc.: *See—*
Carr, Albert A.; Fleming, Robert W.; and Sill, Arthur D., 3,859,307.
Fleming, Robert W.; Sill, Arthur D.; and Sweet, Francis William, 3,859,286.
Meyer, Donald R.; and Sill, Arthur D., 3,859,312.
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Richter, Sidney B.; and Krenzer, John, to Velsicol Chemical Corporation. Heterocyclic anilids. 3,859,308, Cl. 260-340.900.
Rickenbaker, Sidney E. Travel make-up case. 3,858,592, Cl. 132-79.000.
Ricoh Co., Ltd.: *See—*
Kaneko, Tamaki; and Mizuno, Katsumi, 3,858,508.
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Ridder, Gunna Olof August: *See—*
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Riekkinen, Asko Sakari, to Oy Nokia AB. Apparatus for automatic changing of reels in a spooler for wire products. 3,858,817, Cl. 242-25.00A.
Riisager, Harold E.: *See—*
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Riley, Lance W., to Apollo Lasers Inc. Transverse mode selection in lasers for holography. 3,858,963, Cl. 350-3.500.
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Roberts, Harry E., III; and Carey, Thomas H., to Columbia Research Laboratories, Inc. Torque measuring and control system. 3,858,443, Cl. 73-136.00R.
Roberts, Maurice; Harris, John Derek; Humpage, Roy William; and Crow, Geoffrey George, to Joseph Lucas (Industries) Limited. Method of filling a battery plate grids with non-flowable battery paste. 3,859,135, Cl. 136-27.000.
Robertshaw Controls Company: *See—*
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Robinson, Dale Dario: *See—*
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Robota, Stephen, to Hooker Chemicals & Plastics Corporation. Process for the preparation of organic fluorine compounds. 3,859,372, Cl. 260-651.00F.
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Carty, Daniel T.; and Oline, James A., 3,859,389.
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Kay, Christopher John, 3,859,149.
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Root, James R., to Ruskin Manufacturing Company. Air duct access door. 3,858,355, Cl. 49-363.000.
Rosaen, Borje O.; and Firth, Robert L. Fluid cylinder. 3,858,485, Cl. 91-436.000.
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Rose, Ewald. Body noise detector. 3,858,575, Cl. 128-2.05S.
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Roth, Helmut, to Robert Bosch G.m.b.H. Electronic ignition system with means for limiting engine speed. 3,858,563, Cl. 123-118.000.
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Rubio, Manuel Jesus, to Berrera, Robert Gonzalez. Tortilla and process using acetic and propionic acids. 3,859,449, Cl. 426-151.000.
Rudina, Galina Jurievna: *See—*
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Rush, Charles G. Electric generation apparatus. 3,859,589, Cl. 322-40.000.
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Russ, Paul E., Sr.; McComber, Donald R.; and Patterson, Philip M., to Gates Rubber Company, The. Endless track and slide therefor. 3,858,949, Cl. 305-35.0EB.
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Ruthel, Walter W.; and Evans, Leo G., to Hooker Chemicals & Plastics Corporation. Electrolytic cell including cathode busbar structure, cathode fingers, and anode base. 3,859,196, Cl. 204-278.000.
Rutschke, Arno; and Grabher, Erich, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Tool holder equipped with a code carrier. 3,858,892, Cl. 279-1.0TS.
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Ryan, Donald F.; and Williams, Allan N., to said Ryan, by said Williams. Alveolar gas trap and method of use. 3,858,573, Cl. 128-2.00C.
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Sahm, Wilfried; Schinzel, Erich; and Rosch, Gunter, to Hoechst Aktiengesellschaft. Benzofurane derivatives, process for their preparation and their use as optical brighteners. 3,859,350, Cl. 260-346.20R.
Saida, Youichi; Ito, Hajime; Imanaga, Kojiro; and Jyumonji, Tomoji, to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha. Hydraulic, rotary servo-actuator. 3,858,484, Cl. 91-375.000.
Saito, Shigeru; Ishikura, Jun; Sasaki, Yutaka; Moriya, Kiyoshi; and Imada, Takashi, to Nitto Chemical Industry Co., Ltd. Process for the production of methacrylonitrile. 3,859,325, Cl. 260-465.300.
Saito, Shigeru; Ishikura, Jun; and Sasaki, Yutaka, to Nitto Chemical Industry Co., Ltd. Process for simultaneously producing methacrylonitrile and butadiene by vapor-phase catalytic oxidation of mixed butenes. 3,859,326, Cl. 260-465.300.
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Sakamoto, Kazuhiko: *See—*
Nakamoto, Yuzuru; Kubota, Eishi; Sakamoto, Kazuhiko; Okuda, Koji; Imamura, Takaaki; Sano, Shigeshia; and Suzuki, Fukushi, 3,858,635.
Sakshaug, Eugene C., to General Electric Company. Overvoltage surge arrester with improved voltage grading circuit. 3,859,568, Cl. 317-68.000.
Salem Corporation: *See—*
Wilt, Charles R., Jr., 3,859,172.
Salladay, Mack, to Action Industries, Inc. Knock-down multiple shelf assembly, particularly a lazy susan. 3,858,529, Cl. 108-103.000.
Sallin, Pierre, to Productions Sarcem S.A. Spool winding machine. 3,858,624, Cl. 140-92.200.
Sallis, Dwight L.; and Berkowitz, Nathan L., to Lock Corporation of America. Lock mechanism. 3,858,420, Cl. 70-81.000.
Samoilov, Sergei Mikhailovich; Plate, Nikolai Alfredovich; Maltsev, Vadim Vasilievich; Monastyrsky, Viktor Nikolaevich; and Kargin, Valentin Alexeevich, deceased (by Velichko, Kaleria Petrovna, heiress). Copolymers of ethylene with vinyl monomers, methods of their production and application. 3,859,220, Cl. 252-49.700.
Samuel Moore and Company: *See—*
Whitledge, Jon K.; and Kavick, Edward M., 3,858,298.
Sand, Robert H., to Vulcan Radiator Company, The. Heating and ventilating enclosure module connection means. 3,858,995, Cl. 403-300.000.
Sandco Ltd.: *See—*
Sluysmans, Tony, 3,858,712.
Sander, Wendell B., to Fairchild Camera and Instrument Corporation. Ccd light change monitor for sensing movement etc.. 3,859,518, Cl. 250-209.000.
Sanders Associates, Inc.: *See—*
Heft, Eugene J., 3,859,659.
Sanderson, Wallace George: *See—*
Fearns, Robert Henry; and Sanderson, Wallace George, 3,859,102.
Sandi, Floyd J.: *See—*
Blinkilde, Paul J.; and Sandi, Floyd J., 3,859,485.
Sandovskaya, Valentina Alexandrovna: *See—*
Terentiev, Vladimir Dmitrievich; Dorman, Efim Isaakovich; Izmailova, Julia Sergeevna; Feigin, Viktor Zinovievich; Sandovskaya, Valentina Alexandrovna; Rudina, Galina Jurievna; Lastochkin, Jury Vasilievich; Person, Leonid Matveevich; Saxonov, Gennady Markovich; Yakimovich, Viktor Yakovlevich; and Zaitsev, Vladimir Andreevich, 3,858,556.
Sandoz Ltd. a/k/a Sandoz AG: *See—*
Hochreuter, Richard, 3,859,378.
Sandoz Ltd. (also known as Sandoz AG): *See—*
Ebnother, Anton; and Rissi, Erwin, 3,859,290.
Sangamo Electric Company: *See—*
Brazier, Robert L., 3,859,574.
Sankyo Company Limited: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Korumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 3,859,293.
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Santilli, Arthur A.; Scoiese, Anthony C.; and Bell, Stanley C., to American Home Products Corporation. Disubstituted acetamidoanthraquinones. 3,859,315, Cl. 260-377.000.
Sarmac S.A.: *See—*
Rusbach, Maurice, 3,858,515.
Sasaki, Yutaka: *See—*
Saito, Shigeru; Ishikura, Jun; Sasaki, Yutaka; Moriya, Kiyoshi; and Imada, Takashi, 3,859,325.
Saito, Shigeru; Ishikura, Jun; and Sasaki, Yutaka, 3,859,326.
Sato, Mikio: *See—*
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Sato, Norio: *See—*
Murakami, Masuo; Ichikawa, Kaichiro; Imai, Kazuo; Sato, Norio; Ito, Noriki; Oka, Yoshihiko; Kawamura, Tsutomu; and Ozasa, Teruaki, 3,859,277.

Sauey, Donald P., to Closet Maid, Inc. Template. 3,859,002, Cl. 408-16.000.

Saul, Robert H.: *See—*
Dawson, Larry Ralph; Lorimor, Orval George; and Saul, Robert H., 3,859,148.

Saunders, Norman B., to Display Enterprises, Inc. Soft turn-on power switching circuit. 3,859,591, Cl. 323-18.000.

Saunders, Peter Reginald: *See—*
Lofquist, Robert Alden; Saunders, Peter Reginald; and Mayer, Richard Eugene, 3,859,045.

Saunders, Robert M.; Kohler, George O.; Connor, Margaret A.; and Edwards, Richard H., to United States of America, Agriculture. Preparation of stable protein concentrates from grain by-products. 3,859,451, Cl. 426-364.000.

Saveliev, Vyacheslav Vasilievich: *See—*
Dolgov, Valentin Mikhailovich; Saveliev, Vyacheslav Vasilievich; Krylov, Vladimir Konstantinovich; Tomashevsky, Valentin Mitrofanovich; and Zolotarev, Evgeny Ivanovich, 3,858,369.

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Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Yanagimachi, Akio; Yamane, Hisakichi; Sawabe, Eiichi; Uehara, Takashi; and Yoshino, Takehiko, 3,859,458.

Saxl, Karel, to Imperial Metal Industries (Kynoch) Limited. Safety systems. 3,858,904, Cl. 280-150.0SB.

Saxon, B. Ronald, to International Telephone and Telegraph Corporation. Arrangement to control a function at a remote location. 3,859,462, Cl. 179-2.00A.

Saxonov, Gennady Markovich: *See—*
Terentiev, Vladimir Dmitrievich; Dorman, Efim Isaakovich; Izmailova, Julia Sergeevna; Feigin, Viktor Zinovievich; Sandovskaya, Valentina Alexandrovna; Rudina, Galina Jurievna; Lastochkin, Jury Vasilievich; Person, Leonid Matveevich; Saxonov, Gennady Markovich; Yakimovich, Viktor Yakovlevich; and Zaitsev, Vladimir Andreevich, 3,858,556.

Scaduto, John R. Cutting device for forming polygonal shaped openings. 3,858,482, Cl. 90-24.00R.

Scaglione, Paolo; and Zamboni, Valentino, to Montecatini Edison S.p.A. Vulcanizable chlorinated polyhydrocarbon compositions, process for their vulcanization and vulcanized elastomers thus obtained. 3,859,241, Cl. 260-31.20R.

Scannell, James Parnell: *See—*
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Scapa Dryers (Canada) Ltd.: *See—*
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Schade, Gerhart; and Melin, Hans, to Dynamit Nobel AG. Method for the preparation of polyesters of 1,4-butane diol. 3,859,257, Cl. 260-75.00M.

Schaefer Corporation: *See—*
Kenyon, Andre J., 3,858,408.

Schaffer, Richard H.: *See—*
Selley, Wilbur Webb; and Schaffer, Richard H., 3,858,749.

Schantz, Spencer C. Gas ignition system. 3,859,036, Cl. 431-263.000.

Scheel, Hans-Jorg, to International Business Machines Corporation. Apparatus for the epitaxial growth of semiconducting material by liquid phase epitaxy from at least two source solutions. 3,858,553, Cl. 118-421.000.

Scheer, Marcel: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,859,331.

Schehrer, Rudolf: *See—*
Schenkel, Klaus Dieter; and Schehrer, Rudolf, 3,859,465.

Scheiding, Horst F. H. Conveying or holding device for metallic surfaces, more particularly for the sides of sipes. 3,858,681, Cl. 182-142.000.

Schenkel, Gerrit, to U.S. Philips Corporation. Method of manufacturing a device for converting electric oscillations into acoustic vibrations and vice versa. 3,858,305, Cl. 29-594.000.

Schenkel, Klaus Dieter; and Schehrer, Rudolf, to Licentia Patent-Verwaltungs G.m.b.H. Data transmission system with multiple access for the connected users. 3,859,465, Cl. 179-15.0AL.

Scherer, Otto; Korinth, Jurgen; and Frisch, Peter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process and catalyst for fluorinating aliphatic compounds. 3,859,424, Cl. 423-472.000.

Schewe, Larry R.: *See—*
Smith, Paul K.; and Schewe, Larry R., 3,859,048.

Schick Incorporated: *See—*
Brenneman, J. Edward; and Waters, Robert S., 3,858,314.

Schiemann, Wolfram. Device for discharge nozzles on cans. 3,858,766, Cl. 222-479.000.

Schillalies, Helmut, to Leybold-Heraeus-Verwaltung G.m.b.H. Secondary ion mass spectroscopy. 3,859,226, Cl. 250-282.000.

Schilling, Klaus: *See—*
Horn, Anton; Thielmann, Klaus; Pfeifer, Otto, deceased; and Schilling, Klaus, 3,859,050.

Schindlbauer, Hellmuth; Eichberger, Walter; and Brunner, Josef K., to ERZ and Stahl AG. Process for obtaining esters from cyclohexanone waste. 3,859,335, Cl. 260-484.00R.

Schindler, Walter, deceased: *See—*
Blattner, Hans; and Schindler, Walter, deceased, 3,859,439.

Schinzel, Erich: *See—*
Sahm, Wilfried; Schinzel, Erich; and Rosch, Gunter, 3,859,350.

Schlamp, Hermann, to Ronson Corporation. Gas lighter. 3,859,035, Cl. 431-255.000.

Schleppnik, Alfred A., to Monsanto Company. 2-Alkyl-oct-5-en-2-ols and their esters. 3,859,366, Cl. 260-632.00R.

Schlick, Rolland L. Automatic blackboard eraser. 3,858,265, Cl. 15-77.000.

Schlumberger Technology Corporation: *See—*
Nelligan, William B., 3,859,524.

Schmechel, Werner, to F. Zimmerman & Co., Firma. Device for wrapping vertically piled coins or the like in bags manufacturing out of a shrink film. 3,858,380, Cl. 53-52.000.

Schmid, Josef. Device for connecting and holding the rod fittings in two finished concrete parts, or the like. 3,858,846, Cl. 254-29.00A.

Schmidt, Josef, to Bell & Howell Company. Battery holder. 3,859,140, Cl. 136-173.000.

Schmiegel, Walter Werner: *See—*
Harrell, Jerald Rice; and Schmiegel, Walter Werner, 3,859,259.

Schmits, Heinz-Herbert: *See—*
Heinemann, Otto; Schmits, Heinz-Herbert; and Schulz, Hans, 3,859,039.

Schmitt, Ludwig; and Kipping, Joachim, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Apparatus for drafting long staple fibre slivers. 3,858,278, Cl. 19-260.000.

Schnee, Karl: *See—*
Keller, Karlfried; Schnee, Karl; and Tichy, Dieter, 3,859,351.

Schneider, William A.; and Hirsch, Stanley C., to Hirsch, Stanley C. Stringed instrument. 3,858,480, Cl. 84-1.160.

Schnizer, Arthur W.: *See—*
Aguilo, Adolfo; and Schnizer, Arthur W., 3,859,336.

Schoeck, Vincent E., to Carborundum Company, The. Dust collector element. 3,859,065, Cl. 55-378.000.

Scholin, Harold W.; Lisiecki, Hieronim L.; Butkus, George W.; and Eitzinger, Robert, to said Eitzinger, by said Butkus. Automatic springing machine. 3,858,297, Cl. 29-208.00D.

Schonfeld, Peter: *See—*
Kowalski, Hans-Jochen; and Schonfeld, Peter, 3,859,007.

Schramm, George T., to du Pont de Nemours, E. I., and Company. An exterior siding of an aluminum substrate coated with a durable low gloss clear coating composition containing fluorocarbon polymer particles. 3,859,120, Cl. 117-132.0CF.

Schrock, Stephen N.: *See—*
Tillman, Herman L.; Schrock, Stephen N.; and King, Gerald M., 3,859,653.

Schroder, Ludwig; and Thomas, Klaus. Certain 2,3,5-trihalo-6-methylpyrid-4-yl-alkanoates. 3,859,295, Cl. 260-295.00R.

Schroeder, Paul Robert: *See—*
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Schromm, Kurt: *See—*
Renth, Ernst Otto; Mentrup, Anton; Schromm, Kurt; and Giesemann, Rolf, 3,859,438.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
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Schmitt, Ludwig; and Kipping, Joachim, 3,858,278.

Schultz, Harry D.; and Lund, Harold H., to Champion Industries, Inc. Utensil washing apparatus. 3,858,595, Cl. 134-47.000.

Schultz, Peter C., to Corning Glass Works. Method of producing glass by flame hydrolysis. 3,859,073, Cl. 65-60.000.

Schulz, George W.; and Schulz, Werner C. Precision head for a machine tool. 3,859,003, Cl. 408-234.00R.

Schulz, Hans: *See—*
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Schulz, Werner C.: *See—*
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Schumacher, Bernd: *See—*
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Schumacher, Ernest W., to Virginia Chemicals Inc. Combination liquid trapping suction accumulator and evaporator pressure regulator device. 3,858,407, Cl. 62-217.000.

Schumann, Robert W., to Nicolet Instrument Corporation. Digital measurement apparatus with improved expanded display. 3,859,556, Cl. 315-24.000.

Schwartz, Stephan L.: *See—*.
Unger, Hans Peter Olof; Westberg, Eric J. H.; and Schwartz, Stephan L., 3,858,796.

Schwellenbach, Robert D. Inline continuity indicator device. 3,859,646, Cl. 340-253.00R.

Schwert, Joseph: *See—*
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Science Union Et Cie, Societe Francaise De Recherche Medicale: *See—*
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SCM Corporation: *See—*
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Scoiese, Anthony C.: *See—*
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Scott, Myrsyl Walter: *See—*
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Scott, Robert D., to Research Development Systems, Inc. Dehydration and packaging of foodstuffs. 3,858,499, Cl. 99-495.000.

Sealectro Corporation: *See—*
Laserson, Gregory L.; and Hopper, Harry W., Jr., 3,859,483.

Seamans, Phillip W. Electrical circuit for a phone answering device. 3,859,464, Cl. 179-6.00R.

Sears, Roebuck and Co.: *See—*
Reid, Jay H., 3,858,662.
Seeger, Ernest: *See—*
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Seeley, Larry E.; and Seeley, Edward H. Spray paint container and attachment therefor. 3,858,810, Cl. 239-121.000.
Seidel, Harry W., to Raytheon Company. Oven vent hood. 3,858,568, Cl. 126-299.00R.
Seifert, Gunter: *See—*
Winkler, Helmut; Seifert, Gunter; Moll, Hans; Oeckl, Otto; and Werner, Eberhard, 3,858,429.
Seitzer, Walter H., to Sun Ventures, Inc. Manufacture of hydrogen. 3,859,373, Cl. 423-657.000.
Seiwa Denki Company, Ltd.: *See—*
Yamaguchi, Tokio, 3,858,313.
Sekhon, Jagdish S., to Hi-Shear Corporation. Blind fastener set by rotary stud having threads of opposite hand. 3,858,479, Cl. 85-70.000.
Seki, Shigeo: *See—*
Sekizawa, Yasuharu; Seki, Shigeo; Nomiya, Bunzo; Koeda, Takemi; Kai, Fumio; Akai, Naotoshi; Yusa, Yasushi; and Fukuyasu, Fuguaki, 3,859,362.
Sekine, Tomio: *See—*
Kusaka, Kunio; Osawa, Makoto; Hagiwara, Yoshitoshi; Sekine, Tomio; and Takagi, Yoshiaki, 3,859,083.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Tsuge, Yasuhiko; and Koizumi, Noboru, 3,858,680.
Sekizawa, Yasuharu; Seki, Shigeo; Nomiya, Bunzo; Koeda, Takemi; Kai, Fumio; Akai, Naotoshi; Yusa, Yasushi; and Fukuyasu, Fuguaki, to Meiji Seika Kaisha Ltd. Alkyl-2,3,3-triiodoallyl ethers and process for their preparation and a composition containing the same. 3,859,362, Cl. 260-614.00R.
Seleznev, Jury Emelyanovich; Burkin, Jury Alexandrovich; and Kuzmin, Sergei Vladimirovich. Method of making ferrite matrices. 3,858,310, Cl. 29-604.000.
Seleznev, Jury Emelyanovich: *See—*
Burkin, Jury Alexandrovich; and Seleznev, Jury Emelyanovich, 3,858,294.
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Seliber, Joseph, to Pacific Lighting Service Co. Vacuum freezing vapor compression apparatus. 3,859,069, Cl. 62-58.000.
Selley, Wilbur Webb; and Schaffer, Richard H., to Bison Manufacturing Company, Inc. Dirt receptacle. 3,858,749, Cl. 220-35.000.
Sellstedt, John H., to American Home Products Corporation. Mixed phosphorus anhydrides and phosphorus amides of 6-aminopenicillanic acid. 3,859,298, Cl. 260-307.70E.
Semchenko, Ivan Alexandrovich; Semendyaev, Alexandr Fedorovich; Ivanov, Konstantin Grigorievich; Tkachenko, Georgy Petrovich; and Shteiert, Nikolai Pavlovich. Method of producing cement clinker and binder containing ground cementclinker produced by this method. 3,859,104, Cl. 106-103.000.
Semendyaev, Alexandr Fedorovich: *See—*
Semchenko, Ivan Alexandrovich; Semendyaev, Alexandr Fedorovich; Ivanov, Konstantin Grigorievich; Tkachenko, Georgy Petrovich; and Shteiert, Nikolai Pavlovich, 3,859,104.
Sendzimir, Tadeusz. Anvil rollbed cyclic mill and method of rolling. 3,858,423, Cl. 72-189.000.
Senoo, Rikizo. Excavator. 3,858,737, Cl. 214-762.000.
Serafini, Angelo: *See—*
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Serban, Alexander; and Webber, Lionel Grenville, to ICI Australia Limited. Certain thienyl compounds used to control acarina. 3,859,440, Cl. 424-275.000.
Sergeev, Ivan Demyanovich: *See—*
Smirnov, Mikhail Dmitrievich; Sergeev, Ivan Demyanovich; Brod, Ilya Iosifovich; Kharman, Mikhail Nikolaevich; Puzynya, Leonid Vasilievich; Veinberg, Ikhil Abramovich; Zakharova, Ekaterina Georgievna; Lapshin, Vladimir Pavlovich; Kitaeva, Valentina Vasilievna; Petrov, Leonid Alexandrovich; Kukushkin, Vladimir Maximovich; Stukalov, Vladimir Nikolaevich; Smirnov, Pavel Mikhailovich; Novokreschenov, Viktor Timofeevich; Shushkevich, Eduard Nikolaevich; Atkarsky, Anatoly Alexandrovich; Okun, Boris Davydovich; Karasik, Vladimir Zakharovich; and Khodosova, Vera Nikolaevna, 3,858,263.
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Botvinnik, Mikhail Moiseevich; Shakaryan, Jury Gevondovich; Dovganjuk, Ivan Yakovlevich; Klimov, Boris Petrovich; Zhuchkov, Mikhail Ivanovich; Borzyak, Jury Gordeevich; Tjufilin, German Mikhailovich; Baksht, Mikhail Vladimirovich; Blotsky, Nikolai Nikolaevich; Plotnikova, Tatyana Vasilievna; and Filichev, Oleg Nikolaevich, 3,859,578.
Shang, David C. T., to International Business Machines Corporation. Method for making thin film tungsten-thorium alloy. 3,859,176, Cl. 204-12.000.
Sheckler, Addison C.; and Lin, Luke C., to Xerox Corporation. High performance blocking electrode for electrophotophoresis. 3,859,576, Cl. 317-262.00A.
Shefsick, Paul K.; and Cone, Carroll, to Holcroft & Company. Recuperator for gas-fired radiant tube furnace. 3,859,040, Cl. 432-214.000.
Shell Oil Company: *See—*
Czerski, Jan, 3,859,406.
Van der Gaag, Gerrit; and Tomey, Thomas C., 3,859,028.
Shellberg, James E.: *See—*
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Shelton, Jeo: *See—*
Hagood, Jerry W.; Shelton, Jeo; and Norman, Ralph L., 3,859,550.
Shen, Josephine H.; Klier, Kamil; and Zettlemoyer, Albert C., to Lehigh University. Ice nucleation by micas. 3,858,805, Cl. 239-2.00R.
Shiba, Kaoru, to Ebara Infilco Kabushiki Kaisha. Process for incinerating slurry and apparatus therefor. 3,858,535, Cl. 110-8.00C.
Shigeyasu, Motoo; and Kuihara, Kenzo, to Maruzen Oil Co. Ltd.; and Maksuyama Petrochemicals Inc. Process for continuous production of highly pure terephthalic acid. 3,859,344, Cl. 260-524.00R.
Shinkai, Kunio; Yamada, Hazuo; Sakaki, Kenji; and Yasuda, Hironori, to Howa Kagyo Kabushiki Kaisha. Automatic yarn piecing and knotting method and apparatus for the open-end spinning machine. 3,858,385, Cl. 57-34.00R.
Shiokawa, Kozo: *See—*
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Shipley, Roy E.: *See—*
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Shirodker, Rogunata, to Varta Batterie Aktiengesellschaft. Unformed electrode plates for lead storage batteries. 3,859,134, Cl. 136-26.000.
Shiroki, Masami: *See—*
Nakanishi, Michio; Shiroki, Masami; Tahara, Tetsuya; and Araki, Kazuhiko, 3,859,275.
Shore, Daniel B., to International Harvester Company. Forward reverse drive control providing automatic braking. 3,858,696, Cl. 192-4.00C.
Shore, Frank. Picture frame simulating strip. 3,858,335, Cl. 35-53.000.
Short, Robert J. Animated display apparatus. 3,858,339, Cl. 40-32.000.
Shteiert, Nikolai Pavlovich: *See—*
Semchenko, Ivan Alexandrovich; Semendyaev, Alexandr Fedorovich; Ivanov, Konstantin Grigorievich; Tkachenko, Georgy Petrovich; and Shteiert, Nikolai Pavlovich, 3,859,104.
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Sidley, Henry, to Vulco-Sidley Machine Company (Proprietary) Limited. Manufacture of gloves, such as surgical gloves, from latex. 3,859,410, Cl. 264-303.000.
Siemens Aktiengesellschaft: *See—*
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Kleinhans, Siegfried; and Kummlee, Hans, 3,858,987.
Kowalski, Hans-Jochen; and Schonfeld, Peter, 3,859,007.
Reithmaier, Egon, 3,859,614.
Wiedenmann, Wolfgang, 3,859,461.
Siems, Lee E.; Thigpen, Ben B.; and Harman, Charles C., to Digital Data Systems, Inc. Simultaneous multi-core demagnetization. 3,859,573, Cl. 317-157.500.
Sifferlen, Raymond Henri, to Societe Industrielle De Combustible Nucleaire. Reinforced composite alloys, process and apparatus for the production thereof. 3,858,640, Cl. 164-250.000.
Silbermann, Klaus: *See—*
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Sill, Arthur D.: *See—*
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Meyer, Donald R.; and Sill, Arthur D., 3,859,312.
Silvernail, Joe K. Curtain wall with internal weep means. 3,858,375, Cl. 52-235.000.
Simeth, Claus, to Roland Offsetmaschinen-fabrik Faber & Schleicher AG. Lock-up mechanism for flexible printing plates providing improved reference adjustment. 3,858,512, Cl. 101-415.100.

Singer Company, The: *See—*
Haas, Robert V., 3,858,722.
Hetterich, George C., 3,858,954.
Mischon, Lester, 3,858,414.
Stiles, John C., 3,858,451.
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Singer, Ernst. Sample taking apparatus. 3,858,449, Cl. 73-422.00R.

Singer, Roy W.: *See—*
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Sisson, Ronald L.; and Shellberg, James E., to Clark Equipment Company. Transmissions. 3,858,455, Cl. 74-360.000.

Sisson, Ronald L.; Holmes, Donald E.; and Zeller, Burton S., to Clark Equipment Company. Filter assembly. 3,859,216, Cl. 210-440.000.

Skarek, Jiri: *See—*
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Skvor, Zdenek, to Tesla, narodni podnik. Electrostatic transducer. 3,859,477, Cl. 179-111.00R.

Slack, William Frederick, to Van Dyke Research Corporation. Web sensing apparatus. 3,859,649, Cl. 340-259.000.

Slagle, Martin Luther: *See—*
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Slater, William Wallace, to Celanese Coatings & Specialties Company. Zinc-silicate ester primer coatings. 3,859,101, Cl. 106-1.000.

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Slogaski, Norman D. Handle warmer for fishing rods. 3,858,567, Cl. 126-206.000.

Slonaker, Robert O., to Owens-Corning Fiberglas Corporation. Laminar refractory structures for forming glass fibers. 3,859,070, Cl. 65-1.000.

Sluysmans, Tony, to Sandco Ltd. Method and apparatus for allocating individual items on conveyor belts. 3,858,712, Cl. 198-78.000.

Smalley, Graham; McGrow, George; and Crowley, Dennis, to Allied Colloids Manufacturing Company Limited. Flocculating agents. 3,859,212, Cl. 210-54.000.

Smalling, Claude W., Jr.: *See—*
Gross, David E.; Libers, Roland; and Smalling, Claude W., Jr., 3,859,377.

Smirnov, Mikhail Dmitrievich; Sergeev, Ivan Demyanovich; Brod, Ilya Iosifovich; Kharman, Mikhail Nikolaevich; Puzynya, Leonid Vasilievich; Veinberg, Ikhil Abramovich; Zakharova, Ekaterina Georgievna; Lapshin, Vladimir Pavlovich; Kitaeva, Valentina Vasilievna; Petrov, Leonid Alexandrovich; Kukushkin, Vladimir Maximovich; Stukalov, Vladimir Nikolaevich; Smirnov, Pavel Mikhailovich; Novokreschenov, Viktor Timofeevich; Shushkevich, Eduard Nikolaevich; Atkarsky, Anatoly Alexandrovich; Okun, Boris Davydovich; Karasik, Vladimir Zakharovich; and Khodosova, Vera Nikolaevna. Semiautomatic footwear production line. 3,858,263, Cl. 12-1.00A.

Smirnov, Pavel Mikhailovich: *See—*
Smirnov, Mikhail Dmitrievich; Sergeev, Ivan Demyanovich; Brod, Ilya Iosifovich; Kharman, Mikhail Nikolaevich; Puzynya, Leonid Vasilievich; Veinberg, Ikhil Abramovich; Zakharova, Ekaterina Georgievna; Lapshin, Vladimir Pavlovich; Kitaeva, Valentina Vasilievna; Petrov, Leonid Alexandrovich; Kukushkin, Vladimir Maximovich; Stukalov, Vladimir Nikolaevich; Smirnov, Pavel Mikhailovich; Novokreschenov, Viktor Timofeevich; Shushkevich, Eduard Nikolaevich; Atkarsky, Anatoly Alexandrovich; Okun, Boris Davydovich; Karasik, Vladimir Zakharovich; and Khodosova, Vera Nikolaevna, 3,858,263.

Smith, Harold Byron, Sr., to Illinois Tool Works Inc. Composite plastic bottle and tamperproof closure therefor. 3,858,741, Cl. 215-216.000.

Smith, Nicholas Kimbrough; and Truesdale, James Bartel, to Bell Telephone Laboratories, Incorporated. Redundant data transmission arrangement. 3,859,468, Cl. 179-15.0AL.

Smith, Paul K.; and Schewe, Larry R., to Pierce Chemical Company. Composition and method for the preparation of deuterated esters of carboxylic acids for gas phase analysis. 3,859,048, Cl. 23-230.00M.

Smith, Pleasant R. Collapsible weaning pen for animals. 3,858,555, Cl. 119-20.000.

Smith, Richard R.: *See—*
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Societa Italiana Resine S.I.R. S.p.A.: *See—*
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Societe D'Interet Collectif Agricole Des Sylviculteurs Du Sud-Ouest (S.I.C.A.S.S.O.): *See—*
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Societe Generale de Constuctions Electrique et Mecaniques (ALSTHOM): *See—*
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Societe Generale D'Enterprises: *See—*
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Societe Industrielle De Combustible Nucleaire: *See—*
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Societe Lablabo: *See—*
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Soeffker, Eldred E. Closure and ventilating wall structure. 3,858,638, Cl. 160-102.000.

Sola Basic Industries, Inc.: *See—*
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Solome, Frank J. French and italian bread slicer. 3,858,470, Cl. 83-149.000.

Someya, Taichi: *See—*
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Sommer, Alfred Hermann, to RCA Corporation. Method of making a iii-v compound electron-emissive cathode. 3,858,955, Cl. 316-19.000.

Soulard, Patrick Marie Alfred, to Societe D'Interet Collectif Agricole Des Sylviculteurs Du Sud-Ouest (S.I.C.A.S.S.O.). Activating composition for the tapping of trees. 3,858,354, Cl. 47-10.000.

Southwire Company: *See—*
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SPA Societa Prodotti Antibiotici, S.p.A.: *See—*
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Speirs, Kenneth K.; Weinstein, Martin; and Dean, Michael F., to Chromalloy American Corporation. Corrosion resistant coating system for ferrous metal articles having brazed joints. 3,859,061, Cl. 29-195.000.

Spengler, Walter. Device for drying wet coatings applied to substrates of low electrical conductivity. 3,859,494, Cl. 219-10.610.

Sperry Rand Corporation: *See—*
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Spiegelberg, Hans: *See—*
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Spodig, Heinrich. Magnetic guide roller for conveyor belts. 3,858,710, Cl. 198-41.000.

Spotnails, Inc.: *See—*
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Sprague Electric Company: *See—*
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Sprague, Stephen B. Telescoping power support. 3,859,481, Cl. 191-12.00R.

Spraying Systems Co.: *See—*
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Sprecher, Raymond G., to General Motors Corporation. Vehicle occupant restraint belt retractor. 3,858,826, Cl. 242-107.700.

Squillace, Anthony S.; Martin, Albert E.; and Rudmann, Jerald J., to North American Rockwell Corporation. Silicon nitride-silicon oxide etchant. 3,859,222, Cl. 252-79.300.

Sreenivasan, Baratham, to Lever Brothers Company. Margarine. 3,859,447, Cl. 426-73.000.

Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindmer, Ernat, to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning. 19-Alkylene-14- β-hydroxy-cardenolide derivatives and process for preparing them. 3,859,272, Cl. 260-210.500.

Stachowiak, John E.; and Goss, John B., to American Aero Industries, Inc. High pressure liquid and abrasive cleaning apparatus. 3,858,358, Cl. 51-8.000.

Stamford Chemical Industries, Inc.: *See—*
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Stamicarbon B. V.: *See—*
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Standard Box Spring Company: *See—*
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Standard Oil Company, The: *See—*
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Standardgraph Filler & Fiebig GmbH: *See—*
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Stanke, Walter; Wortberg, Werner; and Fuckert, Karl Otto, to Heinrich Koppers Gesellschaft mit beschrankter Haftung. Apparatus for opening and closing the ascension pipe lid and valve flap on the ascension pipe of a coke oven. 3,858,609, Cl. 137-627.500.

Stanley-Mabo: *See—*
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Staples, Bruce A., to United States of America, Atomic Energy Commission. Calibration source emitting high energy beta particles. 3,859,179, Cl. 204-15.000.

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Steinmetz, Manfried. Infrared radiation system. 3,859,498, Cl. 219-352.000.

Stengel, Edgar; and Emde, Friedhelm, to AEG-Elotherm, G.m.b.H. Method of using workpiece transporting apparatus. 3,859,038, Cl. 432-5.000.

Stephenson, Alvis D., Jr.: *See—*
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Stephenson, Robert L., to Allied Chemical Corporation. Dual action safety seat belt retractor. 3,858,824, Cl. 242-107.400.

Sterling, Henley Frank: *See—*
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Sterner, Francis L., to Omni Spectra, Inc. Second harmonic filter for high frequency source. 3,859,657, Cl. 343-5.0PD.

Stevens, Mario R., to California Institute of Technology. Gas chromatograph. 3,858,435, Cl. 73-23.100.

Stevens, Peter S. Multiple hand tool. 3,858,258, Cl. 7-5.100.

Stevenson, Paul D., to General Motors Corporation. Rotary engine oil pump priming arrangement. 3,859,013, Cl. 418-88.000.

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Stieler, Werner; Oelmeyer, Rolf; Haupt, Heinrich; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Process for the production of polycarbonate solutions. 3,859,245, Cl. 260-34.200.

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Stiles, John C., to Singer Company, The. Acceleration determining methods and apparatus. 3,858,451, Cl. 73-517.00B.

Stiller, Eric T.; Levine, Seymour D.; Principe, Pacifico A.; and Diassi, Patrick A., to E. R. Squibb & Sons, Inc. α-Methylfluorene-2-acetic acid. 3,859,340, Cl. 260-515.00R.

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Stobart, Andrew Ferrand. Fluid heating system. 3,858,802, Cl. 237-12.100.

Stocker, Alan F.: *See—*
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Stohrer, Charles E., Jr.: *See—*
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Stokes, John J., Jr.; and Benish, Charles A., to Aluminum Company of America. Soldering. 3,858,319, Cl. 29-496.000.

Stoll, William M.; Stockwell, Bligh H.; and Eytchison, Robert D., to Kennametal Inc. Hardfacing material and deposits containing tungsten titanium carbide solid solution. 3,859,057, Cl. 29-182.700.

Stolle Corporation, The: *See—*
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Stones, Roy C. System for halting runaway electrically powered train. 3,858,524, Cl. 104-249.000.

Stout, Bob, to Rhodes, Joseph S. Insulating cover for ground faucets. 3,858,632, Cl. 150-52.00R.

Stover, Harry L.: *See—*
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Strauss, Howard J.; and Hill, Edward S., to Gould Inc. Dry battery seal and terminal connection. 3,859,141, Cl. 136-175.000.

Strobl, Fred A.; and Ranieri, Louis F., to Kory Industries, Inc. Control circuit for a lifting magnet. 3,859,571, Cl. 317-123.000.

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Strubhar, Malcolm K.; Fitch, John L.; and Glenn, Edwin E., Jr., to Mobil Oil Corporation. Hydraulic fracturing method for low permeability formations. 3,858,658, Cl. 166-308.000.

Studley, David K., to Quantor Corporation. Heat convection cooling system for optical readout and display device. 3,858,971, Cl. 353-61.000.

Studley Paper Company, Inc.: *See—*
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Sugiyama, Mitsunori: *See—*
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Sullivan, Alfred Bay, to Monsanto Company. Method for preparation of organic azolyl polysulfides. 3,859,297, Cl. 260-306.500.

Sullivan, Royal A.; and Infantino, Dolores, to Kraftco Corporation. Method for rapid curing of cheese. 3,859,446, Cl. 426-36.000.

Sumi, Shozo: *See—*
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Summerfield, William F.; Plizzotto, Joseph F.; and Bosley, Denis V., to Mattel, Inc. Captive flying toy. 3,858,872, Cl. 272-31.00A.

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Tabor, Harry Zvi. Electric motor-flywheel drive system. 3,858,674, Cl. 180-65.00R.
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Takahashi, Nobuhiro; and Ide, Tatsuo, to Nippon Kokan Kabushiki Kaisha. Submerged-arc welding machine. 3,859,495, Cl. 219-125.00R.
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Ohrui, Tetsuya; Sakakibara, Yasuhito; Aono, Yukinaga; Kato, Michio,; Takao, Hiroshi; and Ayano, Masami, 3,859,175.
Takasago Perfumery Co., Ltd.: *See—*
Komatsu, Akira; Akutagawa, Susumu; and Someya, Taichi, 3,859,374.
Takata Kojyo Co., Ltd.: *See—*
Takada, Takezo, 3,858,617.
Takata, Tetsuo; and Nishino, Yukio, to Nippon Kokan Kabushiki Kaisha; and Ohmiya Kigyo Kabushiki Kaisha. Apparatus for coating the inside of pipe. 3,858,552, Cl. 118-318.000.
Takeuchi, Tetsuo. Inspection device in card readers. 3,858,797, Cl. 235-61.11R.
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Yanagimachi, Akio; Yamane, Hisakichi; Sawabe, Eiichi; Uehara, Takashi; and Yoshino, Takehiko, to Hitachi, Limited; Hitachi Electronics, Ltd.; and Nippon Hoso Kyokai. Receiver for receiving a still picture broadcasting signal. 3,859,458, Cl. 178-5.80R.
Talmon, Wolfgang: *See—*
Dworak, Wilhelm; and Talmon, Wolfgang, 3,859,014.
Tanaka, Minoru: *See—*
Yamamoto, Hiroaki; Harada, Hideo; Miyaoka, Hiroshi; Tanaka, Minoru; Kubota, Osamu; Nakamura, Shizuo; and Nakamura, Yasusi, 3,859,367.
Tani, Haruhisa: *See—*
Yazawa, Masahide; Tani, Haruhisa; and Tsuyama, Setsuya, 3,859,156.
Tanigawa, Yukio: *See—*
Ogino, Shigeo; Fujimoto, Shigehisa; Wada, Hiroo; and Tanigawa, Yukio, 3,859,167.
Tanno, Seikichi; Kohgame, Hisashi; and Muroi, Tadashi, to Hitachi, Ltd.; and Hitachi Chemical Company, Ltd. Graft-polymer comprising acrylic rubber and unsaturated compound grafted thereto and blends thereof with pvc. 3,859,383, Cl. 260-876.00R.
Tashker, Ilia Lvovich. Band grinding tool for rounding edge portions of blades for compressor and turbine plants. 3,858,366, Cl. 51-144.000.
Tassone, Joseph V. Baseball and softball type ball tie. 3,858,878, Cl. 273-26.00R.
Tassone, Joseph V.: *See—*
Candor, James T.; and Tassone, Joseph V., 3,858,879.
Tate, Jack F.: *See—*
Flournoy, Kenoth H.; Maddox, Jim, Jr.; and Tate, Jack F., 3,858,656.
Tate, Stanley L.: *See—*
Blackstone, Michael; Maddox, Bryant K.; Rowland, Bobby A.; and Tate, Stanley L., 3,858,776.
Taub, Steven I.: *See—*
Porter, Harold F.; and Taub, Steven I., 3,859,063.
Taube, Arnold: *See—*
Kremser, Georg; and Taube, Arnold, 3,859,238.
Tausanovitch, Dusan: *See—*
Lovisa, Peter R.; and Tausanovitch, Dusan, 3,858,993.
Taylor, Fred W. Recovery of potable water from sanitary waste using solid wastes and refuse as a heat source. 3,859,174, Cl. 203-10.000.
Tazuma, James T., to Goodyear Tire & Rubber Company, The. Separation of piperylenes. 3,859,376, Cl. 260-681.50C.
Telefonaktiebolaget L M Ericsson: *See—*
Borgstrom, Gert Ove; and Ghisler, Walter, 3,859,467.
Tellen, Chester J., to Ametek, Inc. Meter box with cover having biased snap-lock. 3,858,755, Cl. 220-284.000.
Teller, Aaron J., to Teller Environmental Systems, Inc. Selective chromatographic separation. 3,859,417, Cl. 423-244.000.
Teller Environmental Systems, Inc.: *See—*
Teller, Aaron J., 3,859,417.
Telonic Industries, Inc.: *See—*
Brazelton, Bruce H., 3,859,607.
Tenneco Inc.: *See—*
Haren, Ralph J., 3,858,678.
McLaren, James C.; and Reber, Bruce E., 3,859,068.
Terentiev, Vladimir Dmitrievich; Dorman, Efim Isaakovich; Izmailova, Julia Sergeevna; Feigin, Viktor Zinovievich; Sandovskaya, Valentina Alexandrovna; Rudina, Galina Jurievna; Lastochkin, Jury Vasilievich; Person, Leonid Matveevich; Saxonov, Gennady Markovich; Yakimovich, Viktor Yakovlevich; and Zaitsev, Vladimir Andreevich. Power and process plant. 3,858,556, Cl. 122-7.00R.
Terhune, F. Lee; and Rampy, Gordon A., to FMC Corporation. Triaryl phosphate esters. 3,859,395, Cl. 260-966.000.
Terzian, Rouben: *See—*
Glass, Marvin I.; and Terzian, Rouben, 3,858,353.
Tesla, narodni podnik: *See—*
Skvor, Zdenek, 3,859,477.
Tesone, Abelardo A. Tool for removing windshield moldings. 3,858,301, Cl. 29-278.000.
Teufel, Helmut; Engel, Wolfhard; and Seeger, Ernest, to Boehringer Ingelheim G.m.b.H. Halogenated 3-(4'-biphenylyl)-butanols. 3,859,256, Cl. 260-618.00D.
Teufel, Helmut; Engel, Wolfhard; Seeger, Ernst; and Engelhardt, Gunther. Halogenated 4-(4'-bisphenylyl)-butanols. 3,859,363, Cl. 260-618.00D.
Teufel, Helmut: *See—*
Engel, Wolfhard; Seeger, Ernst; Teufel, Helmut; and Engelhardt, Gunther, 3,859,338.
Tewarson, Dinesh K.: *See—*
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Texaco Inc.: *See—*
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Walker, Clarence O., 3,858,654.

Texas Dynamatics, Inc.: *See—*
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Texas Instruments Incorporated: *See—*
Couvillon, James B.; and Shipley, Roy E., 3,859,609.
Hartmann, Clinton S.; and Birch, Michael J., 3,859,608.
Hasty, Turner Elijah, 3,859,180.
McElwain, Jack W.; and Stephenson, Alvis D., Jr., 3,859,598.

Texas Nuclear Corporation: *See—*
Ashe, John B.; Berry, Peter F.; and Hall, James D., 3,859,525.

Textron Inc.: *See—*
Day, Donald L.; Halstead, Charles H.; and Huck, Neil F., 3,858,373.
Halwes, Dennis R., 3,858,831.
Hoddinott, William M.; and Hreschak, Richard J., 3,859,001.
Isaacs, Jacques Harold, 3,858,719.
Runnels, George W., 3,858,283.
Van Amburg, William F., 3,858,538.
Van Amburg, William F., 3,858,539.
Van Amburg, William F., 3,859,150.

Thater, Walter A., to Measuregraph Company, The. Cloth cutting apparatus for cloth rewinding machine. 3,858,475, Cl. 83-471.200.

Thayer, George L., to Robertshaw Controls Company. Step opening thermostatic control device. 3,858,611, Cl. 137-630.140.

Thelemaque, Louis Emanuel: *See—*
Dittrich, Robert George; and Thelemaque, Louis Emanuel, 3,859,470.

Thiel, Frank L., to Corning Glass Works. Optical communication system source-detector pair. 3,859,536, Cl. 250-552.000.

Thiele, Kurt: *See—*
Posselt, Klaus; and Thiele, Kurt, 3,859,305.

Thielmann, Klaus: *See—*
Horn, Anton; Thielmann, Klaus; Pfeifer, Otto, deceased; and Schilling, Klaus, 3,859,050.

Thiery, Jean; Chatard, Michel; Huvey, Michel; and Bonavent, Gerard, to Institut Francais du Petrole, des Carburants et Lubrifiants. Tight flexible pipe. 3,858,616, Cl. 138-133.000.

Thigpen, Ben B.: *See—*
Siems, Lee E.; Thigpen, Ben B.; and Harman, Charles C., 3,859,573.

Thomas, Albert Raymond, Jr. Coupled vane rotary fluid device. 3,858,559, Cl. 123-8.410.

Thomas, Klaus: *See—*
Schroder, Ludwig; and Thomas, Klaus, 3,859,295.

Thomas, Mickey A., to Halliburton Company. Method of dispersing tightly baled fibers. 3,858,275, Cl. 19-65.00R.

Thomas, Morton I., to Iemco Products Inc. Underarm crutch. 3,858,596, Cl. 135-50.000.

Thomas, Paul P., to Winzeler Spamping Co. Adjustable broom block clamp. 3,858,266, Cl. 15-146.000.

Thomas, Raymond Richard: *See—*
Craven, George Frederick; Thomas, Raymond Richard; and Berger, Maurice Francis, 3,859,600.

Thomas, Thomas W., Jr. Boom angle indicator. 3,859,651, Cl. 340-267.00C.

Thompson-CSF: *See—*
Gigoux, Claude, 3,859,177.

Thompson, Elbert Gordon, to Sutton Engineering Company. Straightening machine with overload release. 3,858,425, Cl. 72-245.000.

Thompson, James M., to Proctor Chemical Company, Inc. Durable fire retardant textile materials by anhydrous solvent finishing process. 3,859,124, Cl. 117-136.000.

Thompson, Raymond, to Osborn Steels Limited. Rolling of metal. 3,858,428, Cl. 72-363.000.

Thomson-CSF: *See—*
Blamoutier, Michel; and Fraleux, Jean, 3,859,613.
Ninerailles, Jacques; and Raye, Auguste, 3,859,551.

Thomson, Kenneth W.: *See—*
Bundschuh, John J.; Burnham, William L.; and Thomson, Kenneth W., 3,858,828.

Thorpe, John: *See—*
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Tichy, Dieter: *See—*
Keller, Karlfried; Schnee, Karl; and Tichy, Dieter, 3,859,351.

Tick, Paul A., to Corning Glass Works. Vapor transport film deposition apparatus. 3,858,548, Cl. 118-49.000.

Tidd, Thomas J.: *See—*
Best, Donald T.; and Tidd, Thomas J., 3,859,663.

Tidwell, James T.: *See—*
McGlasson, Donald S.; Tidwell, James T.; Weaver, Charles E.; and Culpepper, Charles A., 3,859,145.

Tietjens, Eduard Willem. Shaving head having separately sprung blades. 3,858,316, Cl. 30-43.600.

Tillman, Herman L.; Schrock, Stephen N.; and King, Gerald M., to Tillman, Herman L. Bowling lane mechanic call system. 3,859,653, Cl. 340-323.000.

Timken Company, The: *See—*
Otto, Dennis L., 3,858,950.

Ting, Yee-Ming: *See—*
Ho, Allen P.; and Ting, Yee-Ming, 3,859,633.

Titus, Charles H., to Electro-Petroleum Inc. Reverse current protective means for rectifier output circuits. 3,859,588, Cl. 321-47.000.

Tjufilin, German Mikhailovich: *See—*
Botvinnik, Mikhail Moiseevich; Shakaryan, Jury Gevondovich; Dovganjuk, Ivan Yakovlevich; Klimov, Boris Petrovich; Zhuchkov, Mikhail Ivanovich; Borzyak, Jury Gordeevich; Tjufilin, German Mikhailovich; Baksht, Mikhail Vladimirovich; Blotsky, Nikolai Nikolaevich; Plotnikova, Tatyana Vasilievna; and Filichev, Oleg Nikolaevich, 3,859,578.

Tkachenko, Georgy Petrovich: *See—*
Semchenko, Ivan Alexandrovich; Semendyaev, Alexandr Fedorovich; Ivanov, Konstantin Grigorievich; Tkachenko, Georgy Petrovich; and Shteiert, Nikolai Pavlovich, 3,859,104.

Toda, Toshimasa: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Korumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 3,859,293.

Todish, Walter Donald: *See—*
Rausch, Paul Gilger; and Todish, Walter Donald, 3,858,853.

Tokushu Seiko Co., Ltd.: *See—*
Kusaka, Kunio; Osawa, Makoto; Hagiwara, Yoshitoshi; Sekine, Tomio; and Takagi, Yoshiaki, 3,859,083.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Komiyama, Kazuo; and Niioka, Takeharu, 3,859,629.

Tokyu Sharyo Seizo Kabushiki Kaisha: *See—*
Tominaga, Hiroshi; Takamatsu, Masanobu; and Adachi, Kohei, 3,858,422.

Tolmie, Robert J., to Sperry Rand Corporation. Shaver inner cutter. 3,858,461, Cl. 76-104.00R.

Tomashevsky, Valentin Mitrofanovich: *See—*
Dolgov, Valentin Mikhailovich; Saveliev, Vyacheslav Vasilievich; Krylov, Vladimir Konstantinovich; Tomashevsky, Valentin Mitrofanovich; and Zolotarev, Evgeny Ivanovich, 3,858,369.

Tomey, Thomas C.: *See—*
Van der Gaag, Gerrit; and Tomey, Thomas C., 3,859,028.

Tominaga, Hiroshi; Takamatsu, Masanobu; and Adachi, Kohei, to Tokyu Sharyo Seizo Kabushiki Kaisha. Jet molding device. 3,858,422, Cl. 72-56.000.

Tomlinson, Neil, to Lucas Electric Company Limited. Lever mounted switch with outer rotating cover. 3,859,489, Cl. 200-157.000.

Torenbeek, Reinder: *See—*
Jaspers, Hans; and Torenbeek, Reinder, 3,859,240.

Torii, Nozomu; and Yamanaka, Minoru, to Aisin Seiki Kabushiki Kaisha. Door lock device. 3,858,916, Cl. 292-45.000.

Torrico, Jorge L.: *See—*
Noll, Burton A.; and Torrico, Jorge L., 3,858,363.

Touw, Theodore R., to International Business Machines Corporation. Hexagonal display array having close-packed cells. 3,859,553, Cl. 313-188.000.

Townsend Engineering Company: *See—*
Townsend, Ray T., 3,858,502.

Townsend, Herbert E., to Bethlehem Steel Corporation. Coating for cathodically protected structures. 3,859,116, Cl. 117-75.000.

Townsend, Ray T., to Townsend Engineering Company. Safety device for a skinning machine. 3,858,502, Cl. 99-589.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Motokawa, Yutaka; and Fukushima, Masaharu, 3,859,504.

Toyo Jozo Co., Ltd.: *See—*
Morishita, Masataka; Inaba, Yoshihito; Kobari, Sadami; Fukushima, Mitsuru; and Abe, Jinnosuke, 3,859,228.

Toyo Suisan Kaisha Ltd.: *See—*
Ishida, Masayuki, 3,858,497.

Toyoda, Yoshinori: *See—*
Muto, Kiyoshi; Yamamoto, Yasuhisa; Toyoda, Yoshinori; Azemi, Shozo; Okano, Shigeru; Masuyama, Kenya; Aihara, Seitaro; Ito, Takao; Ogawa, Isamu; and Harada, Mitsumasa, 3,858,318.

Trabbic, Gerald W.: *See—*
Miller, Ray J.; and Trabbic, Gerald W., 3,858,806.

Traver, Frank J., to General Electric Company. Polysiloxane composition useful as a brake fluid. 3,859,321, Cl. 260-448.20B.

Trelease, Robert B., to Hitco. Resilient seal. 3,858,891, Cl. 277-229.000.

Triumph Werks Nuernberg A.G.: *See—*
Gottsmann, Helmut, 3,858,706.

True Temper Corporation: *See—*
Wood, Morris E., 3,858,822.

Truesdale, James Bartel: *See—*
Smith, Nicholas Kimbrough; and Truesdale, James Bartel, 3,859,468.

Trutzschler & Co.: *See—*
Trutzschler, Hermann, 3,859,066.

Trutzschler, Hermann, to Trutzschler & Co. Dust filter. 3,859,066, Cl. 55-401.000.

Tryon, Dean G., to General Motors Corporation. Carburetor altitude compensation assembly. 3,859,397, Cl. 261-39.00A.

Tsuge, Yasuhiko; and Koizumi, Noboru, to Matsushita General Industrial Company Limited; and Sekisui Kagaku Kogyo Kabushiki Kaisha. Vibration diaphragm and cfne edge of a loudspeaker. 3,858,680, Cl. 181-172.000.

Tsuji, Tadashi; and Korematsu, Mikio, deceased, to Kabushiki Kaisha Kohjin. Highly flame-retardant shaped articles comprising a halogen containing polymer and polyvinyl alcohol. 3,859,390, Cl. 260-899.000.

Tsuyama, Setsuya: *See—*
Yazawa, Masahide; Tani, Haruhisa; and Tsuyama, Setsuya, 3,859,156.

Tucker, Archie J.: *See—*
Miller, Stephen H.; Sutliff, Robert C.; Tucker, Archie J.; White, Neil S.; and Elle, Bruce L., 3,858,968.
Tunstall, Reginald V.: *See—*
Gallap, Francis; and Tunstall, Reginald V., 3,859,401.
Turbyfill, Charles W. Well bore wall cleaner. 3,858,653, Cl. 166-173.000.
Turk, Joseph: *See—*
Vollrath, Walter J.; Vollrath, Richard J.; Virnoche, Paul R.; Turk, Joseph; Gerdes, Paul E.; and Singer, Roy W., 3,858,251.
Turner, John O.; and Deno, Norman C., to Sun Ventures, Inc. Acid-catalyzed decomposition of aliphatic alcohols. 3,859,345, Cl. 260-531.00R.
Turner, Lloyd S.; and Vaughan, Daniel G., to Barnes-Hind Diagnostics, Inc. Breakaway neck container with integral cap. 3,858,739, Cl. 215-32.000.
Tuzson, John J., to Borg-Warner Corporation. Vehicle headlight adjusting system. 3,859,516, Cl. 240-7.1LJ.
Twyford Moors Ltd.: *See—*
Doe, Ewart Harold, 3,858,779.
Ueda, Jun-Ichi: *See—*
Kai, Tsunetoshi; Inoue, Mitsuhiro; Yoshida, Matuo; and Ueda, Jun-Ichi, 3,858,510.
Ueda, Kazunori: *See—*
Okubo, Kei; Saito, Toshio; and Ueda, Kazunori, 3,859,062.
Uehara, Takashi: *See—*
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Uhlir, Pavel; and Maxa, Jaroslav, to ELITEX, Zavody textilniho strojirenstvi, generalni reditelstui. Method of advancing knitwork during its manufacture. 3,858,417, Cl. 66-149.00S.
Ullman, Edwin F.: *See—*
Burkoth, Terry L.; and Ullman, Edwin F., 3,859,333.
Ullmann, Werner; Ferroni, Bernardo; and Schumacher, Bernd, to A.G. fur industrielle Elektronik AGIE Losone b. Locarno. System and method for regulating electric discharge machining gap. 3,859,186, Cl. 204-129.250.
Ulm, Ernest S., to Monsanto Company. Feed control mechanism. 3,858,857, Cl. 259-191.000.
Ulrich, Hannsjorg, to Knapsack Aktiengesellschaft. Process for the manufacture of phosphorus nitride diamides. 3,859,418, Cl. 423-302.000.
Unger, Hans Peter Olof; Westberg, Eric J. H.; and Schwartz, Stephan L. Container for use in treatment of liquid. 3,858,796, Cl. 233-27.000.
Union Carbide Corporation: *See—*
Davis, Robert Bruce, 3,858,404.
Uniroyal A.G.: *See—*
Pasch, Lambert, 3,859,023.
Pasch, Lambert; and Wagemann, Heinz, 3,859,024.
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United Aircraft Corporation: *See—*
Basche, Malcolm; and Kuntz, Urban E., 3,859,144.
Dews, George H.; Eichner, Daniel; and Kemp, Fred S., 3,859,139.
Narsavage, Stephen T.; Vine, Raymond W.; and Emanuelson, Roger C., 3,859,138.
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Agriculture: *See—*
Brown, Roger S.; and Rhodes, Philip L., 3,858,277.
Reinhardt, Robert M.; and Kullman, Russell M. H., 3,859,334.
Saunders, Robert M.; Kohler, George O.; Connor, Margaret A.; and Edwards, Richard H., 3,859,451.
Yeadon, David A.; Danna, Gary F.; and Cooper, Albert S., Jr., 3,859,121.
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Army: *See—*
Durand, Philip E.; and Norris, Lonnie H., 3,858,241.
Graves, David J.; and Ritchey, Charles R., 3,858,379.
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Horne, Ottis J., Jr.; and Smith, Wesley E., 3,859,422.
Luton, James N., Jr.; Gauster, Wilhelm F.; and Brown, Robert L., 3,859,615.
McGlasson, Donald S.; Tidwell, James T.; Weaver, Charles E.; and Culpepper, Charles A., 3,859,145.
Radkowsky, Alvin; Conley, George Henry; Ryals, Henry Wesley; Hanson, John Nils; Cohen, Joseph David; and Weinreich, William Arthur, III, 3,859,165.
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Interior: *See—*
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Mendelson, Ralph A.; Staudhammer, Karl P.; and Valencia, Roberto, Jr., 3,859,080.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Erpenbach, Hubert. Method of producing a storage bulb for an atomic hydrogen maser. 3,859,119, Cl. 117-97.000.
Navy: *See—*
Duffy, James V., 3,859,043.
Jarzynski, Jacek; McLelland, Howard B.; and Kessler, Hyman, 3,858,437.
Parikh, Gokaldas C.; and Duvall, Charles Steven, 3,859,430.
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U.S. Philips Corporation: *See—*
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Gommans, Hubertus Johannes Josephus; and Stikkelbroeck, Josephus Gerardus Henricus, 3,859,455.
Helm, Uwe, 3,859,639.
Herzner, Karl Heinz, 3,859,603.
Janssen, Frits Jacques; and Lehmann, Arnold, 3,859,602.
Piesslinger, Gertraud Agnes Anna; and Kunnen, Hubertus M. J. J., 3,858,964.
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United States Steel Corporation: *See—*
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Universal Oil Products Company: *See—*
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Eimen, Shawn H., 3,858,834.
Gatsis, John G., 3,859,199.
Massie, Stephen N., 3,859,428.
Parnes, Marvin Jay, 3,859,053.
Symon, Ted; and Sparks, Allen K., 3,859,311.
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University of Southern California: *See—*
Bass, Michael; Dwyer, Richard M.; and Haverback, Bernard J., 3,858,577.
Uozumi, Iwao. Punching tool for forming a cross-recess of a screw. 3,858,261, Cl. 10-7.000.
Upjohn Company, The: *See—*
Moon, Malcolm W., 3,859,441.
Urban, Peter, to Universal Oil Products Company. Removal of H_2S from gas stream containing H_2S and CO_2. 3,859,414, Cl. 423-222.000.
Urban, Peter, to Universal Oil Products Company. Scrubbing a gas stream containing so2 and o2 with an absorbent containing a reducing agent. 3,859,416, Cl. 423-242.000.
Urbanosky, Harold J. Methods and apparatus for testing earth formations. 3,858,445, Cl. 73-155.000.
USM Corporation: *See—*
Duffy, Richard J., 3,858,262.
Usubuchi, Yutaka: *See—*
Fukumi, Hirokazu; Itoh, Hirataka; Itoh, Koryo; and Usubuchi, Yutaka, 3,859,342.
Utz, Edwin Peter: *See—*
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Mendelson, Ralph A.; Staudhammer, Karl P.; and Valencia, Roberto, Jr., 3,859,080.
Valente, Raymond L., to Manco Mfg. Co. Flange punch positioning apparatus. 3,858,471, Cl. 83-368.000.
Vallone, Joseph R.: *See—*
Calandra, Donald A.; Dirubbio, Vincent; and Vallone, Joseph R., 3,858,930.
Van Dyke Research Corporation: *See—*
Slack, William Frederick, 3,859,649.
Van Amburg, William F., to Textron Inc. Slide fastener presser foot. 3,858,538, Cl. 112-235.000.
Van Amburg, William F., to Textron Inc. Slide fastener presser foot assembly. 3,858,539, Cl. 112-235.000.
Van Amburg, William F., to Textron Inc. Method for installing slide fasteners. 3,859,150, Cl. 156-66.000.
Van Der Aue, John P., to Goodyear Tire & Rubber Company, The. Post-curable cured polyurethanes soluble in ketones and other oxygen-containing solvents. 3,859,244, Cl. 260-32.80N.
Van der Gaag, Gerrit; and Tomey, Thomas C., to Shell Oil Company. Mandrel for plug assisted shaping of thermpolastic sheets. 3,859,028, Cl. 425-403.000.
Vander Mey, John E., to Allied Chemical Corporation. Coating printed circuit boards with tin or tin-lead alloy and tin-lead fluoborate plating baths. 3,859,182, Cl. 204-24.000.
Van Dijk, Nicolaas, to G. E. Searle & Co. Scintillation camera with light pipe inserts for improved linearity. 3,859,531, Cl. 250-366.000.
Van Duuren, Hendrik Cornelis Anthony, to De Staat Der Nederlanden, Ten Deze Vertegenwoordigd Door De Directeur Generaal Der Posterijen, Telegrafie En Telefonie. System for the transfer of two states by multiple scanning. 3,859,655, Cl. 340-347.0DD.
Van Gils, Gerard Edward, to General Tire & Rubber Company, The. Adhesive for bonding rubber to steel. 3,859,239, Cl. 260-28.50B.
Van Raden, Leslie T. Ball and socket mechanical and electrical trailer hitch. 3,858,907, Cl. 280-422.000.
Van Sickle, John. Clip device for vehicle glare shield. 3,858,931, Cl. 296-97.00C.
Van Steenburg, Arthur. Floor drain stopper. 3,858,612, Cl. 138-89.000.
Van Weele, Abraham Francois, to Vibroflotation Foundation Company. Method of and apparatus for making sand drains. 3,858,398, Cl. 61-11.000.

Vargiu, Silvio; Passalenti, Beppino; Carpaneti, Edoardo; and Societa Italiana Resine S.I.R. S.p.A. Modified alkyd resin compositions for paints and varnishes comprising oxalic acid. 3,859,235, Cl. 260-22.0CB.

Varta Batterie A.G.: *See—*
Dickfeldt, Siegfried; and Steffens, Karl, 3,859,133.

Varta Batterie Aktiengesellschaft: *See—*
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Vasey, Charles Henry: *See—*
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Vasilchenko, Lev Petrovich: *See—*
Kushnarenko, Sergei Grigorievich; Kononenko, Vadim Grigorievich; Kollerov, Vyacheslav Viktorovich; Morgolenko, Anatoly Sergeevich; Alimochkin, Vladimir Mikhailovich; Orekhov, Albert Ivanovich; Komendantov, Jury Mikhailovich; Vasilchenko, Lev Petrovich; Parkhomenko, Nikolai Mikhailovich; and Anistarov, Nikolai Nikolaevich, 3,858,430.

Vasta, Joseph A., to du Pont de Nemours, E. I., and Company. Metal coated with polyvinylidene fluoride coating compositions. 3,859,123, Cl. 117-132.00A.

Vaughan, Daniel G.: *See—*
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Veba-Chemie AG: *See—*
Kremser, Georg; and Taube, Arnold, 3,859,238.

Veinberg, Ikhil Abramovich: *See—*
Smirnov, Mikhail Dmitrievich; Sergeev, Ivan Demyanovich; Brod, Ilya Iosifovich; Kharman, Mikhail Nikolaevich; Puzynya, Leonid Vasilievich; Veinberg, Ikhil Abramovich; Zakharova, Ekaterina Georgievna; Lapshin, Vladimir Pavlovich; Kitaeva, Valentina Vasilievna; Petrov, Leonid Alexandrovich; Kukushkin, Vladimir Maximovich; Stukalov, Vladimir Nikolaevich; Smirnov, Pavel Mikhailovich; Novokreschenov, Viktor Timofeevich; Shushkevich, Eduard Nikolaevich; Atkarsky, Anatoly Alexandrovich; Okun, Boris Davydovich; Karasik, Vladimir Zakharovich; and Khodosova, Vera Nikolaevna, 3,858,263.

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Samoilov, Sergei Mikhailovich; Plate, Nikolai Alfredovich; Maltsev, Vadim Vasilievich; Monastyrsky, Viktor Nikolaevich; and Kargin, Valentin Alexeevich, deceased, 3,859,220.

Velsicol Chemical Corporation: *See—*
Richter, Sidney B.; and Krenzer, John, 3,859,308.

Velto Industries Ltd.: *See—*
McBurnie, Stuart G.; Jorgensen, William A. W.; and Rocher, Michel L. E., 3,858,918.

Vemco Products, Inc.,: *See—*
Gatland, Geoffrey H.; and Robitaille, Kenneth L., 3,858,452.

Ver, Istvan L.; Danner, William D., and Woitschatzke, Hans, to Skisearch, Inc., by said Danner and Woitschatzke; and Bolt Beranek and Newman, Inc., by said Ver. Three-dimensional ski surface. 3,858,894, Cl. 280-11.13Y.

Veranth, Joseph L.; and Poulo, Louis, to Bose Corporation. Power transistor mounting. 3,859,570, Cl. 317-100.000.

Verbeke, Henry. Plastic bag. 3,858,789, Cl. 229-62.000.

Vernaleken, Hugo: *See—*
Stieler, Werner; Oelmeyer, Rolf; Haupt, Heinrich; and Vernaleken, Hugo, 3,859,245.

Vibroflotation Foundation Company: *See—*
Van Weele, Abraham Francois, 3,858,398.

Victory, Thomas J. Brake band end connection. 3,858,691, Cl. 188-259.000.

Vinal, Richard S.: *See—*
Gysling, Henry J.; and Vinal, Richard S., 3,859,092.

Vincent, David N.; and Golden, Ronald, to Champion International Corporation. Carpet with microcapsules containing volatile flame-retardant. 3,859,151, Cl. 161-67.000.

Vine, Raymond W.: *See—*
Narsavage, Stephen T.; Vine, Raymond W.; and Emanuelson, Roger C., 3,859,138.

Virginia Chemicals Inc.: *See—*
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Virnoche, Paul R.: *See—*
Vollrath, Walter J.; Vollrath, Richard J.; Virnoche, Paul R.; Turk, Joseph; Gerdes, Paul E.; and Singer, Roy W., 3,858,251.

Vlagiu, I.: *See—*
Murgulescu, I. G.; Oncescu, Tatiana; and Vlagiu, I., 3,859,189.

Vogel, Raimund Walther. Ski boot. 3,858,337, Cl. 36-55.000.

Vogelsong, James Howard: *See—*
Clemons, Donald Gordon; and Vogelsong, James Howard, 3,859,641.

Vogt, Georg, to Ohler Eisenwerk Theob. Pfeiffer. Angular container, in particular an eating bowl, of flexible foil material. 3,858,786, Cl. 229-3.5MF.

Vogt, Wilhelm: *See—*
Kandler, Joachim; Merkenich, Karl; Henning, Klaus; Vogt, Wilhelm; Auer, Eberhard; and Glaser, Hermann, 3,859,224.

Vogt, William J., to Lumedyne, Inc. Voltage converter and regulator. 3,859,563, Cl. 315-241.00P.

Volkert, John K., to Compak Systems, Inc. Printed folder. 3,858,792, Cl. 229-73.000.

Vollrath Co., The: *See—*
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Vollrath, Richard J.: *See—*
Vollrath, Walter J.; Vollrath, Richard J.; Virnoche, Paul R.; Turk, Joseph; Gerdes, Paul E.; and Singer, Roy W., 3,858,251.

Vollrath, Walter J.; Vollrath, Richard J.; Virnoche, Paul R.; Turk, Joseph; Gerdes, Paul E.; and Singer, Roy W., to Polar Ware Company. Incinerator toilet. 3,858,251, Cl. 4-131.000.

von Wendt, Karl Freiherr: *See—*
Luck, Jochen; and Thorpe, John, 3,858,517.

Voorhees, John E.; and Hemmelgarn, Donald J., to Minster Machine Company, The. Press structure. 3,858,432, Cl. 72-455.000.

Voss, Harold C.; and Hartford, Leonard F., to Gates Rubber Company, The. Method for making tubular articles. 3,859,408, Cl. 264-89.000.

Vranka, Joseph S.: *See—*
Parker, Charles C.; Polleys, Rhodes W.; and Vranka, Joseph S., 3,859,130.

Vulcan Radiator Company, The: *See—*
Sand, Robert H., 3,858,995.

Vulco-Sidley Machine Company (Proprietary) Limited: *See—*
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Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi: *See—*
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W. B. McGuire Co., Inc.: *See—*
McGuire, Winston B., 3,858,357.

W. R. Grace & Co.: *See—*
Wessells, Forrest A.; and Pickard, John E., 3,859,091.

W-T Industries, Inc.: *See—*
Maxcy, Frederic R.; and Glass, George A., 3,858,850.

Wada, Hiroo: *See—*
Ogino, Shigeo; Fujimoto, Shigehisa; Wada, Hiroo; and Tanigawa, Yukio, 3,859,167.

Wada, Yukio, to Ryowa & Co., Ltd. Hair-piece for a hair wig having an all directional contractility and its processing method for the same. 3,858,591, Cl. 132-53.000.

Wadlington, James Carroll, to Bell Telephone Laboratories, Incorporated. Overcurrent protection circuit utilizing peak detection circuit with variable dynamic response. 3,859,586, Cl. 321-18.000.

Wadsworth, William F. Feed conveyor apparatus. 3,858,660, Cl. 171-57.000.

Wagemann, Heinz: *See—*
Pasch, Lambert; and Wagemann, Heinz, 3,859,024.

Wagenknecht, John H., to Monsanto Company. Process for producing n-phosphonomethyl glycine triesters. 3,859,183, Cl. 204-59.00R.

Wagner, Karl F., Jr., to General Motors Corporation. Flight assembly for composter elevating device. 3,858,814, Cl. 241-101.700.

Wagner, Robert G.: *See—*
Connors, William P.; Wagner, Robert G.; and Richmond, Jon C., 3,859,521.

Wainwright, Edward S.: *See—*
Hall, Roger L.; Wainwright, Edward S.; and Clarkson, Kenneth, 3,859,652.

Wakabayashi, Yasuo. Segment type, electric light figure indicator. 3,858,341, Cl. 40-130.00E.

Wakamatsu, Hisato: *See—*
Hattori, Tadashi; Wakamatsu, Hisato; Nakase, Takamichi; and Yoshida, Shuzo, 3,859,541.

Wald Manufacturing Company, Incorporated: *See—*
Humlong, Robert Frank, 3,858,942.

Walden, Jack M.: *See—*
Watson, Robert E.; Walden, Jack M.; and Near, Charles W., 3,859,635.

Waldorf, Allan J.: *See—*
Baird, Kenneth M.; Dobrowolski, Jerzy A.; Waldorf, Allan J.; and Carman, Philip D., 3,858,977.

Waldow, Carl E., to Raymond Lee Organization, Inc., The, a part interest. Vehicle door supporting apparatus. 3,858,864, Cl. 269-17.000.

Waldschmidt, Leo A.: *See—*
Bender, John H., Jr.; Jeffries, Dorval D.; Ekberg, Ethen L.; and Waldschmidt, Leo A., 3,858,604.

Walker, Clarence O., to Texaco Inc. Hydraulic mining technique for recovering bitumen from subsurface tar sand deposits. 3,858,654, Cl. 166-250.000.

Walker, Maurice J., to M. Walker Associates, Inc. Planning tool for developing the staffing requirements of a service work force. 3,859,511, Cl. 235-85.00R.

Wallace, William K., to Chicago Pneumatic Tool Company. Angle nut runner with integral torque transducer means of obtaining value of delivered torque. 3,858,444, Cl. 73-139.000.

Wallin, Karl Lennart. Miniature golf course. 3,858,887, Cl. 273-176.00G.

Wallington, Frederick L.: *See—*
Banyas, John D.; and Wallington, Frederick L., 3,858,709.

Walter, Henry J.; and White, Roy, to Clairol Incorporated. Hair roller. 3,858,588, Cl. 132-33.00R.

Walther, Hans, to Joh. A. Benckiser, Chemische Fabrik GmbH. Crystallization apparatus having pressure-liquid level control means. 3,859,052, Cl. 23-273.00R.

Wanders, Dieter: *See—*
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Ward, Donald H.: *See—*
Hoppesch, Joseph P.; Padgitt, Kenneth W.; and Ward, Donald H., 3,858,434.

Ward, John Wesley, Jr.: *See—*
Habich, Adolph Broadus; and Ward, John Wesley, Jr., 3,859,662.

Ware, Arnold G.; and Marbach, Edward P. Blood reference standard and process for blood gas test. 3,859,049, Cl. 23-230.00B.

Ware, Franklyn O.; and Hill, Alan M., to Lawrence Paper Company. Flour based paper size. 3,859,108, Cl. 106-150.000.

Warner-Lambert Company: *See—*
Ferraro, Frank A., 3,858,315.
Warwick Electronics Inc.: *See—*
Gharaibeh, Hashem M., 3,858,312.
Nero, Leroy W., 3,859,544.
Washington, Derek: *See—*
Beasley, Robert Malcolm; Harman, David John; Mainard, Douglas Raymond; and Washington, Derek, 3,859,071.
Washington University, The: *See—*
Chuang, Henry Ying Huang; and Das, Santanu, 3,859,513.
Wat, Edward Koon Wah, to du Pont de Nemours, E. I., and Company. Urea derivatives of 2-imidozolidone. 3,859,301, Cl. 260-309.700.
Waters, Robert S.: *See—*
Brenneman, J. Edward; and Waters, Robert S., 3,858,314.
Watkins, Bruce J., to Regan Offshore International, Inc. Flotation means for subsea well riser. 3,858,401, Cl. 61-46.000.
Watson, Hugh R., to Wilkinson Sword Limited. Pressurised dispensers. 3,858,764, Cl. 222-399.000.
Watson, Robert E.; Walden, Jack M.; and Near, Charles W. Programmable calculator. 3,859,635, Cl. 340-172.500.
Watson, Thorpe E.: *See—*
Battiston, Louis; Niessen, Paul; Wellington, John R.; and Watson, Thorpe E., 3,858,642.
Watts, Peter J. Angler's lures. 3,858,344, Cl. 43-42.050.
Waymar Industries, Inc.: *See—*
Koehring, Richard G., 3,858,933.
Weaver, Charles E.: *See—*
McGlasson, Donald S.; Tidwell, James T.; Weaver, Charles E.; and Culpepper, Charles A., 3,859,145.
Webber, Lionel Grenville: *See—*
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Weber-Knapp Company: *See—*
Allette, Michael P., 3,858,472.
Webster, John L., to Reynolds Metal Company. Road construction and panel for making same. 3,859,000, Cl. 404-41.000.
Weckstein, Raymond A., to Sola Basic Industries, Inc. Constant wattage heating element. 3,859,506, Cl. 219-552.000.
Wehr Corporation: *See—*
Dravnieks, Konstantins, 3,858,491.
Wei, Peter H. L., to American Home Products Corporation. 2-Substituted-4,5,6-tetrahydrobenzothiazole-4-carboxylic acids and their alkyl esters. 3,859,280, Cl. 260-240.00G.
Weider, Benjamin, to Internax Holdings Limited. A push-pull type of exercising device. 3,858,874, Cl. 272-79.00R.
Weigand, Alan Hugh, to Intellectual Property Development Corporation. Reducing cholesterol levels. 3,859,437, Cl. 424-238.000.
Weigl, James, to Puritan-Bennett Corporation. Flexible hose construction. 3,858,615, Cl. 138-121.000.
Weiner, Irving. System for remote control of the starting of motor vehicles including visual indication of accelerator linkage and starter circuit actuation. 3,859,540, Cl. 290-38.000.
Weinreich, William Arthur, III: *See—*
Radkowsky, Alvin; Conley, George Henry; Ryals, Henry Wesley; Hanson, John Nils; Cohen, Joseph David; and Weinreich, William Arthur, III, 3,859,165.
Weinstein, Martin: *See—*
Speirs, Kenneth K.; Weinstein, Martin; and Dean, Michael F., 3,859,061.
Weir Pumps Limited: *See—*
Randell, Forrest Thomson, 3,859,006.
Weischedel, Richard C., to General Electric Company. Wide dynamic range omnidirectional optical sensor for detecting nuclear detonations. 3,859,519, Cl. 250-206.000.
Weiss, Le Roy. Adjustable pallet. 3,858,723, Cl. 206-386.000.
Welch, Robert W.: *See—*
Dukes, Clifford F.; and Welch, Robert W., 3,859,314.
Welkowsky, Murray Samuel: *See—*
Proudian, Andrew P.; Azzarelli, Teodoro; and Welkowsky, Murray Samuel, 3,859,529.
Wellington, John R.: *See—*
Battiston, Louis; Niessen, Paul; Wellington, John R.; and Watson, Thorpe E., 3,858,642.
Wells, James R., to du Pont de Nemours, E. I., and Company. Process for recovery of nickel from a deactivated hydrocyanation catalyst. 3,859,327, Cl. 260-465.80R.
Wells, Rodney Lee: *See—*
Crescentini, Lamberto; and Wells, Rodney Lee, 3,859,380.
Wells, William: *See—*
Haysom, Derek W. R.; and Wells, William, 3,859,078.
Welsch, Walter N., to Dynabrade, Inc. Die grinder. 3,858,362, Cl. 51-170.0PT.
Welti, Clarence W.: *See—*
Comeau, Henri Jules, 3,858,441.
Weman, Per Olof, to Klippan GmbH. Retractor for a safety belt especially for motor vehicles. 3,858,825, Cl. 242-107.400.
Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
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Werner, Eberhard: *See—*
Winkler, Helmut; Seifert, Gunter; Moll, Hans; Oeckl, Otto; and Werner, Eberhard, 3,858,429.
Wernick, Saul. Wide screen formal super 8 motion picture system. 3,858,969, Cl. 352-192.000.
Wernicke & Co. K.G.: *See—*
Meckler, Helmut H., 3,858,982.
Wesco Industries Corporation: *See—*
Deniega, Jose Castillo, 3,858,830.
Wessells, Forrest A.; and Pickard, John E., to W. R. Grace & Co. Preparation of printing or pattern plates. 3,859,091, Cl. 96-36.300.
West, Thomas Summers, to National Research Development Corporation. Atomic absorption and fluorescence spectroscopy. 3,858,980, Cl. 356-85.000.
Westberg, Eric J. H.: *See—*
Unger, Hans Peter Olof; Westberg, Eric J. H.; and Schwartz, Stephan L., 3,858,796.
Westell, William E., to Baird-Atomic, Inc. Passive image stabilization system. 3,859,460, Cl. 178-7.200.
Western Electric Company Incorporated: *See—*
Boyer, John A.; Ludwig, David P.; and Zwickel, Friedrich, 3,858,721.
Westervelt, James T.; Swis, Philip E.; and Brown, Glenn M., to Cross Company, The. Method and means for automatically marking timing indicia on vehicle engines. 3,858,289, Cl. 29-156.40R.
Westinghouse Electric Corporation: *See—*
Lewis, Ivor J.; and McCloskey, Thomas H., 3,858,844.
Preziosi, Luigi M.; and Fallon, Bernard R., 3,859,554.
Westlund, Lars-Erik: *See—*
Jonsson, Nils Ake; Merenyi: Ferenc; and Westlund, Lars-Erik, 3,859,341.
Weston, David Frederick, to Imperial Chemical Industries Limited. Assembly device. 3,858,293, Cl. 29-211.00R.
Westvaco Corporation: *See—*
DeLigt, John, 3,858,476.
Maurer, Hans W., 3,859,269.
Whalen, Bernard F.; and Yetter, Harry G. Universal trashboard for moldboard plows. 3,858,664, Cl. 172-759.000.
Wharton, Franklin Eugene. Button down end closure. 3,858,747, Cl. 220-25.000.
Wheelabrator-Frye, Inc.: *See—*
Leliaert, Raymond M., 3,858,359.
Whirlpool Corporation: *See—*
Besing, Wayne L., 3,858,409.
Whisler, Edwin Lee, to Deere & Company. Transmission and brake interlock. 3,858,695, Cl. 192-4.00A.
White, Eugene F.; and White, Frances H. Knitting machine yarn feeding apparatus. 3,858,416, Cl. 66-132.00R.
White, Frances H.: *See—*
White, Eugene F.; and White, Frances H., 3,858,416.
White Motor Corporation of Canada Limited: *See—*
Maiste, Arved; and Seton, Walter F., 3,858,384.
White, Neil S.: *See—*
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White, Roy: *See—*
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Whiteledge, Jon K.; and Kavick, Edward M., to Samuel Moore and Company. Swaging apparatus. 3,858,298, Cl. 29-237.000.
Whitsett, Jack W. Abrading device. 3,858,367, Cl. 51-332.000.
Wiart, Albert, to Jeumont-Schneider. System for adjusting and commutating current in machine windings. 3,859,577, Cl. 318-138.000.
Wickens, James Charles: *See—*
Fothergill, Graham Alwyn; Osbond, John Mervyn; and Wickens, James Charles, 3,859,279.
Wiedenmann, Wolfgang, to Siemens Aktiengesellschaft. Operational method for the control of a device. 3,859,461, Cl. 178-30.000.
Wiese, Winfred J., to Borg-Warner Corporation. Spring-loaded mechanical seal with torque control. 3,858,890, Cl. 277-93.00R.
Wieser, Rudolf, to Maschinenfabrik Andritz Aktiengesellschaft. Pump with offset inflow and discharge chambers. 3,859,008, Cl. 415-219.000.
Wight, Edward M., to Glacier Industries, Inc. Stick insertion apparatus. 3,859,019, Cl. 425-126.00S.
Wilhelm, Frederick C., to Universal Oil Products Company. Hydrocarbon conversion with a multimetallic catalytic composite. 3,859,201, Cl. 208-139.000.
Wilkerson Corporation: *See—*
Dunn, Myron, 3,858,403.
Wilkinson Sword Limited: *See—*
Watson, Hugh R., 3,858,764.
Williams, Allan N.: *See—*
Ryan, Donald F.; and Williams, Allan N., 3,858,573.
Williams, Colin, to Imperial Chemical Industries Limited. Capacitor winding. 3,858,285, Cl. 29-25.420.
Williams, John M., to du Pont de Nemours, E. I., and Company. Apparatus for electrochemical processing. 3,859,195, Cl. 204-272.000.
Williams, Robert P.; Butterfield, Ted Lee; and Emory, Lyle J., to Spraying Systems Co. Spray nozzle for low pressure spray and uniform spray pattern. 3,858,812, Cl. 239-599.000.
Williams, Roy G. Basketball training device. 3,858,876, Cl. 273-1.50A.
Wilson, Billy F.; and Spidell, William H., to Dresser Industries, Inc. High temperature well logging instrument having increased utilization of dewar flasks. 3,859,523, Cl. 250-261.000.
Wilson, John C.: *See—*
Hamb, Frederick L.; and Wilson, John C., 3,859,254.
Hamb, Fredrick L.; and Wilson, John C., 3,859,097.
Wilson, John Charles, to Eastman Kodak Company. 1,1,3-Trimethyl-5-hydroxymethyl-3-(4-hydroxymethyl phenyl)indane. 3,859,364, Cl. 260-618.00F.

Wilson, M. Van; and Miller, Gary L., to Liberty Fabrics of New York, Inc. Automatic yarn feed rate control system for warp beam knitting machines. 3,858,415, Cl. 66-86.00A.

Wilson, Pryce. Demountable building. 3,858,372, Cl. 52-81.000.

Wilt, Charles R., Jr., to Salem Corporation. Multiple rabbled rotary hearth. 3,859,172, Cl. 202-117.000.

Win, Maung Hla; De Salvo, Walter Anthony; and Kenney, Edward Joseph. Enzymatic detergent. 3,858,854, Cl. 252-89.000.

Wing, Stephen C.: *See—*
Kirby, Russell B., Jr.; and Wing, Stephen C., 3,858,641.

Winker, Bernard L., to International Harvester Company. Bulldozer frame with strut stress limiter. 3,858,665, Cl. 172-803.000.

Winkler, Helmut; Seifert, Gunter; Moll, Hans; Oeckl, Otto; and Werner, Eberhard, to Eumuco Aktiengesellschaft fur Maschinenbau; and Maschinenfabrik Augsburg-Nurnberg Akiengesellschaft, part interest to each. Apparatus and process for fabricating rear axle housings for motor vehicles. 3,858,429, Cl. 72-405.000.

Winslow, Donald L., to J. M. Ney Company, The. Muffle furnace with sighting assembly. 3,859,041, Cl. 432-250.000.

Winzeler Spamping Co.: *See—*
Thomas, Paul P., 3,858,266.

Wiseman, Thomas James; and Howard, Peter Barry, to British Titan Limited. Pigment production. 3,859,109, Cl. 106-300.000.

Wiseman, Thomas James; and Howard, Peter Barry, to British Titan Limited. Production of coated TiO_2 pigments. 3,859,115, Cl. 117-70.00A.

Woitschatzke, Hans: *See—*
Ver, Istvan L.; Danner, William D.; and Woitschatzke, Hans, 3,858,894.

Wolcke, Uwe: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,859,331.

Wolf, William Edward, to du Pont de Nemours, E. I., and Company. Inspection system for web materials. 3,859,537, Cl. 250-559.000.

Wolk, Piero, to Dresser Industries, Inc. Well instrument positioning device. 3,858,651, Cl. 166-241.000.

Wolthausen, Edward C.: *See—*
Reba, Imants; and Wolthausen, Edward C., 3,859,205.

Wong, Backman, to Standard-Thomson Corporation. Thermally responsive valve apparatus. 3,858,800, Cl. 236-34.000.

Wood, Arthur S. M., Jr.; and Darragh, Kirk Vail, to Stauffer Chemical Company. Process for recovery of sulfur values. 3,859,425, Cl. 423-567.000.

Wood, Cecil H. Helical ducting means and method for forming the same. 3,858,421, Cl. 72-50.000.

Wood, Laurence H.: *See—*
Armstrong, Ernie R.; and Wood, Laurence H., 3,858,866.

Wood, Morris E., to True Temper Corporation. Spinning reel. 3,858,822, Cl. 242-84.20A.

Woodhouse, William E. Furniture stop. 3,858,838, Cl. 248-345.100.

Woods, Harold T., to Multifastener Corporation. Nut coil de-reeler. 3,858,299, Cl. 29-211.00D.

Worley, Arthur C.: *See—*
Buchanan, William L.; and Worley, Arthur C., 3,859,033.

Wortberg, Werner: *See—*
Stanke, Walter; Wortberg, Werner; and Fuckert, Karl Otto, 3,858,609.

Wray, Gary Q.; and Holden, John C., to Halliburton Company. Apparatus for testing oil wells using annulus pressure. 3,858,649, Cl. 166-162.000.

Wright, Andrew Charles Walden: *See—*
Newstead, Charles; and Wright, Andrew Charles Walden, 3,858,488.

Wright, Arthur D. Bicycle and seat support. 3,858,906. Cl. 280-283.000.

Wright, John F.: *See—*
Yoerger, William E.; McCabe, John M.; and Wright, John F., 3,859,090.

Wulfsberg Electronics, Inc.: *See—*
Wulfsberg, Paul G.; Frederickson, Dennis L.; and Alden, John R., 3,859,475.

Wulfsberg, Paul G.; Frederickson, Dennis L.; and Alden, John R., to Wulfsberg Electronics, Inc. Decoder channel selector and enunciator system in an airborne radiotelephone system. 3,859,475, Cl. 179-41.00A.

Wurdemann, Wilhelm Ludwig Heinrich Ernst: *See—*
Bronkhorst, Armand Francois; and Wurdemann, Wilhelm Ludwig Heinrich Ernst, 3,859,453.

Wyman, Charles E.: *See—*
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Xerox Corporation: *See—*
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Heurtley, John Crampton, 3,858,973.
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Yabe, Shinichi; and Kamada, Masayuki, to Fuji Photo Film Co., Ltd. Roller driving system for feeding sheet materials. 3,858,870, Cl. 271-272.000.

Yakimovich, Viktor Yakovlevich: *See—*
Terentiev, Vladimir Dmitrievich; Dorman, Efim Isaakovich; Izmailova, Julia Sergeevna; Feigin, Viktor Zinovievich; Sandovskaya, Valentina Alexandrovna; Rudina, Galina Jurievna; Lastochkin, Jury Vasilievich; Person, Leonid Matveevich; Saxonov, Gennady Markovich; Yakimovich, Viktor Yakovlevich; and Zaitsev, Vladimir Andreevich, 3,858,556.

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233 3,859,063
368 3,859,064
378 3,859,065
401 3,859,066
485 3,859,067
498 3,859,068

CLASS 56
10.5 3,858,383
14.2 3,858,384

CLASS 57
34R 3,858,385
140R 3,858,386
3,858,387

CLASS 58
57.5 3,858,389
90R 3,858,388

CLASS 60
39.14 3,858,390
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427 3,858,393
617 3,858,394
637 3,858,392
688 3,858,395
698 3,858,396

CLASS 61
.5 3,858,397
11 3,858,398
41A 3,858,399
45R 3,858,400
46 3,858,401
46.5 3,858,402

CLASS 62
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51 3,858,404
58 3,859,069
196 3,858,405
210 3,858,406
217 3,858,407
283 3,858,408
285 3,858,409
458 3,858,410

CLASS 64
1R 3,858,411
8 3,858,412
17A 3,858,413

CLASS 65
1 3,859,070
11R 3,859,071
42 3,859,072
60 3,859,073

CLASS 66
50A 3,858,414
86A 3,858,415
132R 3,858,416
149S 3,858,417

CLASS 68
235D 3,858,418

CLASS 70
55 3,858,419
81 3,858,420

CLASS 71
90 3,859,074
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93 3,859,076

CLASS 72
50 3,858,421
56 3,858,422
189 3,858,423
242 3,858,424
245 3,858,425
269 3,858,426
334 3,858,427
363 3,858,428
405 3,858,429
430 3,858,430
448 3,858,431
455 3,858,432

CLASS 73
15B 3,858,433
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23.1 3,858,435
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67.5R 3,858,437
67.9 3,858,438
71.4 3,858,439
88E 3,858,441
88.5R 3,858,440
94 3,858,442
136R 3,858,443
139 3,858,444
155 3,858,445
194A 3,858,446
196 3,858,447
231R 3,858,448
422R 3,858,449
423A 3,858,450
517B 3,858,451

CLASS 74
202 3,858,453
3,858,453
229 3,858,454
360 3,858,455
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512 3,858,457
606 3,858,458
645 3,858,459
753 3,858,460

CLASS 75
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59 3,859,078
124 3,859,079
126C 3,859,080
3,859,081
128A 3,859,083
128 3,859,082
166B 3,859,084
204 3,859,085
211 3,859,086
213 3,859,087

CLASS 76
104R 3,858,461

CLASS 79
5 3,858,462

CLASS 81
3R 3,858,463
119 3,858,464
129 3,858,465
170 3,858,466
179 3,858,467
185 3,858,468

CLASS 83
37 3,858,469
149 3,858,470
397 3,858,472
401 3,858,473
424 3,858,474
471.2 3,858,475
512 3,858,476

CLASS 84
1.16 3,858,480
410 3,858,477

CLASS 85
10E 3,858,478
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CLASS 89
14C 3,858,481

CLASS 90
24R 3,858,482

CLASS 91
6.5 3,858,483
375 3,858,484
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487 3,858,486
488 3,858,487

CLASS 92
61 3,858,488

CLASS 93
51R 3,858,489
53M 3,858,490

CLASS 96
1.2 3,859,088
1.4 3,859,089
1.5 3,859,090
36.3 3,859,091
64 3,859,093
67 3,859,094
74 3,859,095
84A 3,859,096
87R 3,859,097
90R 3,859,098
3,859,099
107 3,859,100

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110 3,858,491

CLASS 99
306 3,858,493
312 3,858,494
421HH 3,858,495
448 3,858,496
450.6 3,858,497
470 3,858,498
483 Re.28,292
495 3,858,499
504 3,858,500
571 3,858,501
589 3,858,502

CLASS 100
33PB 3,858,503
74 3,858,504
93RP 3,858,505

CLASS 101
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93.19 3,858,509
127.1 3,858,507
132 3,858,508
395 3,858,510
415.1 3,858,511
3,858,512
3,858,513
426 3,858,514

CLASS 102
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70.2R 3,858,516

CLASS 104
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3,858,519
89 3,858,520
148LM 3,858,522
148SS 3,858,521
166 3,858,626
247 3,858,523
249 3,858,524

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136 3,858,525

CLASS 106
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49 3,859,102
50 3,859,103
103 3,859,104
118 3,859,105
120 3,859,106
123TQ 3,859,107
150 3,859,108
300 3,859,109

CLASS 108
51 3,858,526
55 3,858,527
60 3,858,528
103 3,858,529
111 3,858,530
144 Re.28,293

CLASS 109
23 3,858,531

CLASS 110
7S 3,858,532
8C 3,858,533
3,858,535
8R 3,858,534

CLASS 112
114 3,858,536
224 3,858,537
235 3,858,538
3,858,539

CLASS 113
54 3,858,540

CLASS 114
43.5 3,858,541
103 3,858,542
208R 3,858,543

CLASS 117
27 3,859,110
33.3 3,859,131
36.8 3,859,111
3,859,112
43 3,859,113
47R 3,859,114
70A 3,859,115
75 3,859,116
94 3,859,117
3,859,118
97 3,859,119
132CF 3,859,120
132A 3,859,123
136 3,859,124
138.5 3,859,121
138.8F 3,859,122
155UA 3,859,125
169R 3,859,126
212 3,859,127
213 3,859,128
237 3,859,129
240 3,859,130

CLASS 118
8 3,858,544
13 3,858,545
16 3,858,546
49 3,858,547
3,858,548
49.1 3,858,549
50 3,858,550
64 3,858,551
318 3,858,552
421 3,858,553

CLASS 119
2 3,858,554
20 3,858,555

CLASS 122
7R 3,858,556

CLASS 123
8.05 3,858,557
8.13 3,858,558
8.41 3,858,559
8.47 3,858,560
32EA 3,858,561
73A 3,858,562
118 3,858,563
122AB 3,858,564
122H 3,858,565
185A 3,858,566

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206 3,858,567
299R 3,858,568
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CLASS 128
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1R 3,858,571
2A 3,858,572
2C 3,858,573
2.05S 3,858,575
2.05T 3,858,574
2.06R 3,858,576
8 3,858,577
20 3,858,578

57 3,858,579
214C 3,858,580
218A 3,858,581
220 3,858,582
266 3,858,583
286 3,858,584
290R 3,858,585
303.1 3,858,586

CLASS 131

7 3,858,587
81A 3,858,593

CLASS 132

33R 3,858,588
45R 3,858,589
46R 3,858,590
53 3,858,591
79 3,858,592
92A 3,858,594

CLASS 134

2 3,859,132
47 3,858,595

CLASS 135

50 3,858,596

CLASS 136

26 3,859,134
27 3,859,135
100M 3,859,136
107 3,859,137
120FC 3,859,138
3,859,139
166 3,859,133
173 3,859,140
175 3,859,141
179 3,859,142
205 3,859,143

CLASS 137

1 3,858,597
102 3,858,598
218 3,858,599
322 3,858,600
374 3,858,601
423 3,858,602
433 3,858,603
488 3,858,604
512.15 3,858,605
596.16 3,858,606
625.25 3,858,608
625.5 3,858,607
627.5 3,858,609
3,858,610
630.14 3,858,611

CLASS 138

89 3,858,612
96T 3,858,613
105 3,858,614
121 3,858,615
133 3,858,616
141 3,858,617
149 3,858,618

CLASS 139

1R 3,858,619
190 3,858,621
421 3,858,622
425A 3,858,623

CLASS 140

92.2 3,858,624
123.6 3,858,625

CLASS 141

1 3,858,627
46 3,858,628
52 Re.28,294
227 3,858,629

CLASS 144

144 3,858,630
246F 3,858,631

CLASS 148

6.3 3,859,144
20.3 3,859,145
36 3,859,146
37 3,859,147
172 3,859,148

CLASS 150

52R 3,858,632

CLASS 152

209R 3,858,633
213A 3,858,634
330 3,858,635
3,858,636

CLASS 156

22 3,859,149
66 3,859,150
88 3,859,152
184 3,859,154
212 3,859,155
265 3,859,156
268 3,859,157
331 3,859,158
581 3,859,159

CLASS 157

1.24 3,858,637

CLASS 160

102 3,858,638

CLASS 161

42 3,859,160
44 3,859,161
67 3,859,151
133 3,858,273
160 3,859,162
182 3,859,153

CLASS 162

198 3,859,163

CLASS 164

194 3,858,639
250 3,858,640
251 3,858,641
276 3,858,642

CLASS 165

47 3,858,643
51 3,858,644
66 3,858,645
145 3,858,646
171 3,858,647

CLASS 166

120 3,858,648
162 3,858,649
173 3,858,653
224A 3,858,650
241 3,858,651
250 3,858,654
274 3,858,652
3,858,656
305R 3,858,655
3,858,657
308 3,858,658

CLASS 169

77 3,858,659

CLASS 171

57 3,858,660

CLASS 172

1 3,858,661
297 3,858,662
447 3,858,663
759 3,858,664
803 3,858,665

CLASS 173

59 3,858,666

CLASS 174

66 3,859,454
88C 3,859,455

CLASS 175

53 3,858,667
107 3,858,668
322 3,858,669
374 3,858,670
410 3,858,671

CLASS 176

2 3,859,164
18 3,859,165
38 3,859,166

CLASS 177

136 3,858,672

CLASS 178

3 3,859,456
5.1 3,859,457
5.8R 3,859,458
6 3,859,459
7.2 3,859,460
30 3,859,461

CLASS 179

2A 3,859,462
6R 3,859,463
3,859,464
15AA 3,859,469
15AL 3,859,465
3,859,468
15BS 3,859,466
15BY 3,859,467
18EA 3,859,470
18FH 3,859,472
18GF 3,859,471
27CA 3,859,473
27DA 3,859,474
41A 3,859,475
100C 3,859,476
111R 3,859,477
122 3,859,478
175.21 3,859,479
178 3,859,480

CLASS 180

26R 3,858,673
65R 3,858,674
66R 3,858,675

CLASS 181

33G 3,858,676
45 3,858,677
55 3,858,678
145 3,858,679
172 3,858,680

CLASS 182

142 3,858,681
153 3,858,682
156 3,858,683
207 3,858,684

CLASS 184

1.5 3,858,686
6.16 3,858,685
15R 3,858,687

CLASS 187

9 3,858,688

CLASS 188

24 3,858,689
32 3,858,690
259 3,858,691
366 3,858,692

CLASS 190

16 3,858,693

CLASS 191

12R 3,859,481
32 3,858,694

CLASS 192

.098 3,858,699
4A 3,858,695
4C 3,858,696
58B 3,858,697
89R 3,858,698
111A 3,858,700

CLASS 194

1F 3,858,701

CLASS 195

1.2 3,859,168
51R. 3,859,167
63 3,859,169
80 3,859,170
96 3,859,171

CLASS 197

1R 3,858,702
3,858,703
133R 3,858,704
172 3,858,705
176 3,858,706

CLASS 198

19 3,858,707
20C 3,858,708
20R 3,858,709
41 3,858,710
52 3,858,711
78 3,858,712
200 3,858,713
213 3,858,714
229 3,858,715
241 3,858,716

CLASS 200

61.08 3,859,482
61.45R 3,859,483
83Y 3,859,484
85A 3,859,485
144B 3,859,486
144R 3,859,487
153 3,859,488
157 3,859,489
223 3,859,490
266 3,859,491
293 3,859,492

CLASS 202

117 3,859,172
173 3,859,173

CLASS 203

10 3,859,174
46 3,859,175

CLASS 204

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15 3,859,092
3,859,177
3,859,178
3,859,179
16 3,859,180
3,859,181
24 3,859,182
59R 3,859,183
67 3,859,184
108 3,859,185
129.25 3,859,186
130 3,859,187
158R 3,859,188
159.12 3,859,189
192 3,859,190
195H 3,859,193
195P 3,859,191
195S 3,859,192
208 3,859,194
272 3,859,195
278 3,859,196
284 3,859,197
290R 3,859,198

CLASS 206

44.12 3,858,717
45.19 3,858,718
49 3,858,719
216 3,858,720
330 3,858,721
380 3,858,722
386 3,858,723

CLASS 208

97 3,859,199
139 3,859,201
210 3,859,202
216 3,859,200
3,859,203
3,859,204

CLASS 209

3 3,859,205
17 3,859,206
72 3,858,724
166 3,859,207
3,859,208

CLASS 210

26 3,859,209
28 3,859,210
54 3,859,211
3,859,212
73 3,859,213
169 3,859,214
170 3,859,215
440 3,859,216
523 3,859,217

CLASS 211

13 3,858,725
3,858,726
89 3,858,727

CLASS 212

42 3,858,728

CLASS 213

64 3,858,729

CLASS 214

1PA 3,858,731
1D 3,858,730
8.5K 3,858,732
17CA 3,858,733
86A 3,858,734
331 3,858,735
671 3,858,736
762 3,858,737

CLASS 215

11C 3,858,738
32 3,858,739
216 3,858,740
3,858,741
253 3,858,742
329 3,858,743

CLASS 217

60G 3,858,744

CLASS 219

10.55 3,859,493
10.61 3,859,494
125R 3,859,495
211 3,859,496
218 3,859,502
225 3,859,497
278 3,859,503
345 3,859,504
352 3,859,498
396 3,859,499
433 3,859,505
522 Re.28,295
552 3,859,506
553 3,859,500
3,859,501

CLASS 220

7 3,858,745
21 3,858,746
203 3,858,750
205 3,858,751
243 3,858,747
269 3,858,754
273 3,858,753
276 3,858,748
284 3,858,755
325 3,858,752
326 3,858,749
374 3,858,756

CLASS 221

92 3,858,757

CLASS 222

33 3,858,758
55 3,858,759
153 3,858,760
178 3,858,761
180 3,858,762
193 3,858,763
399 3,858,764
402.2 3,858,771
413 3,858,765
460 3,858,772
479 3,858,766
494 3,858,767
3,858,773

CLASS 223

32 3,858,768
84 3,858,769
94 3,858,770

CLASS 224

42.03B 3,858,775
42.1F 3,858,774

CLASS 225

2 3,858,776

CLASS 226

30 3,858,777
180 3,858,778
189 3,858,779

CLASS 227

8 3,858,780
3,858,781
3,858,782
108 3,858,783

CLASS 228

4 3,858,784
17 3,858,785

CLASS 229

3.5MF 3,858,786
34 3,858,787
44CB 3,858,788
62 3,858,789
72 3,858,790
3,858,791
73 3,858,792

CLASS 233

2 3,858,793
7 3,858,794
14R 3,858,795
27 3,858,796

CLASS 235

61.11D 3,859,510
61.11R 3,858,797
61.7B 3,859,508
61.7R 3,859,507
61.9R 3,859,509
83 3,858,798
85R 3,859,511
151.3 3,859,512
153AE 3,859,513
156 3,858,799
3,859,514
164 3,859,515

CLASS 236

34 3,858,800
3,858,801

CLASS 237

12.1 3,858,802

CLASS 238

14 3,858,803
264 3,858,804

CLASS 239

2R 3,858,805
8 3,858,806
17 3,858,620
56 3,858,807
121 3,858,810
429 3,858,808
553.3 3,858,811
599 3,858,812
684 3,858,809

CLASS 240

7.1LJ 3,859,516

CLASS 241

46.02 3,858,813
101.7 3,858,814
168 3,858,815

CLASS 242

18PW 3,858,816
25A 3,858,817
43 3,858,818
47.01 3,858,830
58.3 3,858,819
66 3,858,820
3,858,821
68.3 Re.28,296
84.2A 3,858,822
84.8 3,858,823
107.4 3,858,824
3,858,825
107.7 3,858,826
131 3,858,827
193 3,858,828
197 3,858,829

CLASS 244

17.27 3,858,831

CLASS 246

182R 3,858,832

CLASS 248

44 3,858,833
94 3,858,835
278 3,858,836
300 3,858,837
345.1 3,858,838
418 3,858,834

CLASS 249

90 3,858,839

CLASS 250

202 3,859,517
206 3,859,519
209 3,859,518
3,859,520
211J 3,859,521
223R 3,859,522
261 3,859,523
262 3,859,524
273 3,859,525
282 3,859,226
302 3,859,526
315 3,859,529
327 3,859,527
328 3,859,528
334 3,859,530
366 3,859,531
369 3,859,532
507 3,859,533
520 3,859,534
542 3,859,535
552 3,859,536
559 3,859,537
572 3,859,538
575 3,859,539

CLASS 251

28 3,858,844
31 3,858,840
43 3,858,841
61.2 3,858,842
99 3,858,843

CLASS 252

32.5 3,859,218
42.7 3,859,219
49.7 3,859,220
51.5A 3,859,221
79.3 3,859,222
89 3,858,854
104 3,859,223
135 3,859,224
153 3,859,225
311.5 3,859,227
316 3,859,228
3,859,229
373 3,859,230
429R 3,859,231
519 3,859,232

CLASS 254

29A 3,858,846
108 3,858,847
134.3FT 3,858,848
134.3R 3,858,849
168 3,858,845

CLASS 256

22 3,858,850

CLASS 259

4 3,858,852
40 3,858,853
104 3,858,855
191 3,858,856
3,858,857

CLASS 260

17R 3,859,233
18N 3,859,234
22CB 3,859,235
23XA 3,859,236
28.5AS 3,859,238
28.5B 3,859,239
29.6R 3,859,240
31.2R 3,859,241
32.6N 3,859,243
32.6R 3,859,242
32.8N 3,859,244
34.2 3,859,245
40R 3,859,246
42.15 3,859,247
45.8A 3,859,248
45.85A 3,859,250
45.85R 3,859,264
45.9NP 3,859,249
47CZ 3,859,251
47UA 3,859,330
49 3,859,252
3,859,253
3,859,254
51EP 3,859,255
75M 3,859,257
77.5CR 3,859,258
77.5R 3,859,259
78S 3,859,378
79.3R 3,859,260
3,859,261
80.77 3,859,262
80.78 3,859,263
85.5R 3,859,265
86.1E 3,859,266
88.2R 3,859,267
88.2 3,859,268
91.3VA 3,859,269
97.7 3,859,270
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210.5 3,859,272
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239.1 3,859,274
239.3A 3,859,278
239.3B 3,859,275
239.3D 3,859,276

239.3R 3,859,277
240G 3,859,280
3,859,281
240J 3,859,279
243C 3,859,282
247.1A 3,859,283
247.5R 3,859,286
248NS 3,859,284
250BC 3,859,285
251QB 3,859,237
251.5 3,859,287
256.4F 3,859,289
256.4N 3,859,288
286 3,859,291
293.58 3,859,293
293.66 3,859,292
293.67 3,859,290
293.73 3,859,294
295R 3,859,295
302D 3,859,296
306.5 3,859,297
306.7E 3,859,298
307A 3,859,299
309.6 3,859,300
3,859,302
309.7 3,859,301
310D 3,859,303
315 3,859,304
326.15 3,859,305
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335 3,859,307
340.9 3,859,308
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343.2R 3,859,311
3,859,312
346.2R 3,859,350
347.3 3,859,313
348.6 3,859,314
377 3,859,315
395B 3,859,316
396R 3,859,317
410.6 3,859,318
3,859,319
448.2B 3,859,321
448.2N 3,859,320
453PH 3,859,323
453R 3,859,322
457 3,859,324
465.3 3,859,325
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465.8R 3,859,327
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468.5 3,859,328
471C 3,859,331
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482C 3,859,334
484R 3,859,335
497A 3,859,336
500.5H 3,859,337
501.16 3,859,338
513R 3,859,339
515R 3,859,340
518R 3,859,341
3,859,342
524M 3,859,343
524R 3,859,344
531R 3,859,345
533R 3,859,346
534R 3,859,347
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535R 3,859,349
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563P 3,859,352
566A 3,859,353
570R 3,859,354
570.7 3,859,355
570.9 3,859,356
590 3,859,357
604HF 3,859,359
604R 3,859,358
609D 3,859,360
610R 3,859,361
614R 3,859,362
618D 3,859,256
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618F 3,859,364
621H 3,859,365
632R 3,859,366
633 3,859,367
635R 3,859,368
3,859,369
638B 3,859,370
648C 3,859,371
651F 3,859,372
677R 3,859,374
680E 3,859,375

681.5C 3,859,376
681.5 3,859,377
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40 3,859,400
45.3 3,859,401
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CLASS 277

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3,858,663	3,858,577	3,859,154	3,858,657	3,859,319	3,858,440
3,858,923	3,858,580	3,859,188	3,858,949	3,859,330	3,858,483
3,858,928	3,858,582	3,859,209	3,859,018	3,859,369	3,858,528
3,859,015	3,858,607	3,859,219	3,859,130	3,859,394	3,858,530
3,859,425	3,858,611	3,859,222	3,859,408	3,859,445	3,858,572
3,859,550	3,858,615	3,859,227	3,859,413	3,859,537	3,858,573
4 : 3,858,390	3,858,618	3,859,230	3,859,470	11 : 3,858,740	3,858,599
3,858,630	3,858,620	3,859,309	3,859,490	12 : 3,858,367	3,858,610
3,858,701	3,858,677	3,859,332	3,859,635	3,858,375	3,858,625
3,859,127	3,858,688	3,859,333	9 : 3,858,244	3,858,450	3,858,626
3,859,657	3,858,693	3,859,347	3,858,257	3,858,495	3,858,644
5 : 3,858,775	3,858,725	3,859,348	3,858,290	3,858,534	3,858,662
6 : Re.28,298	3,858,726	3,859,353	3,858,315	3,858,543	3,858,664
3,858,247	3,858,739	3,859,398	3,858,461	3,858,571	3,858,665
3,858,252	3,858,747	3,859,401	3,858,588	3,858,711	3,858,682
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3,858,258	3,858,767	3,859,451	3,858,676	3,858,761	3,858,707
3,858,281	3,858,770	3,859,463	3,858,719	3,858,849	3,858,714
3,858,282	3,858,774	3,859,469	3,858,762	3,858,864	3,858,716
3,858,291	3,858,784	3,859,481	3,858,868	3,858,877	3,858,741
3,858,304	3,858,804	3,859,484	3,858,972	3,858,881	3,858,748
3,858,317	3,858,832	3,859,502	3,858,995	3,858,954	3,858,754
3,858,321	3,858,836	3,859,509	3,859,001	3,858,956	3,858,780
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3,858,328	3,858,841	3,859,518	3,859,058	3,859,012	3,858,785
3,858,332	3,858,847	3,859,528	3,859,059	3,859,174	3,858,792
3,858,339	3,858,851	3,859,529	3,859,138	3,859,214	3,858,803
3,858,348	3,858,863	3,859,532	3,859,139	3,859,270	3,858,811
3,858,349	3,858,866	3,859,543	3,859,144	3,859,292	3,858,812
3,858,360	3,858,871	3,859,547	3,859,166	3,859,423	3,858,829
3,858,368	3,858,872	3,859,549	3,859,225	3,859,457	3,858,835
3,858,372	3,858,880	3,859,552	3,859,247	3,859,459	3,858,952
3,858,374	3,858,882	3,859,557	3,859,260	3,859,496	3,858,953
3,858,394	3,858,888	3,859,584	3,859,288	3,859,653	3,858,991
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3,858,435	3,858,901	3,859,607	3,859,449	3,858,589	3,859,051
3,858,479	3,858,961	3,859,620	3,859,524	3,858,776	3,859,069
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3,858,929	53 : 3,858,361	54 : 3,858,566	3,858,356	3,858,700	3,859,036
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3,859,045	3,858,937	3,859,349	3,858,494	3,858,834	3,859,556
3,859,380	3,859,026	55 : 3,858,251	3,858,562	3,858,855	3,859,567
3,859,433	3,859,205	3,858,264	3,858,567	3,858,900	3,859,598
52 : 3,858,369	3,859,505	3,858,292	3,858,675	3,859,032	3,859,656

DESIGN PATENTS

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13 : 234,036	18 : 234,048	34 : 234,035	234,045	39 : 234,050	48 : 234,061
15 : 234,042	234,049	234,041			

PLANT PATENTS

6 : 3,674	36 : 3,675				

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[Notice of Dec. 16, 1969, 869 O.G. 6877]

24 : T930,003	36 : T930,001	T930,005			

U. S. GOVERNMENT PRINTING OFFICE : O - 1975

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, Commissioner